The Builder.

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Excavations of the British School at Megalopolis.

WITH the end of May the students of the British School at Athens have brought to a close, for the present season, their excavations on the site of Megalopolis, in Arcadia. Work has been carried on continuously since the middle of March, and, while several points on various parts of the site have been prospected, attention has been mainly confined to the theatre which lies on the south bank of the river, the Helisson, its auditorium facing almost due north, being partly cut out of the low hill side, and made up at the ends by artificial embankments supported by strong double retaining walls.

When the School started work here nothing was visible above ground except the general curve in the hill side which indicated the site, and a few fragments of the end retaining walls; the auditorium was overgrown with thick brushwood and small trees, and the ground in front, over the orchestra and stage, was ploughed land. Trenches were first dug across this latter in order to get at the position of the stage walls. Traces of these were come across at a depth of from 6 ft. to 8 ft. below the surface, and they were followed up east and west, and gradually the general outlines of the stage buildings were laid bare. At the same time the remains of a large square court were discovered in front between the stage and the river, and the lines of the auditorium were unearthed, where the first four lower rows of seats were found to be *in situ*, and almost entire, with the gutter running round in front of them.

The accumulation of earth over the general level of the orchestra has been as much as from 10 ft. to 12 ft., which has necessitated a considerable amount of heavy cutting in the trenches, and, of course, it has been impossible to completely clear the whole area of the orchestra and stage in the short period during which the excavations have been in progress. This must be reserved for another season, but enough has been done to show the general nature of the plan, and to give us an idea of the size and arrangement of this, the largest of the theatres of Greece.

The results of the excavations show us a theatre with an orchestra of about 100 ft. diameter. The auditorium is slightly more than a semi-circle, about 7 ft. or 8 ft. on each side, and the line of the arc is continued round beyond the semi-circle, as at Epidauros, and not run in straight towards the stage as at Athens. The face of the Greek stage is about 30 ft. in front of the ends of the seats, so that there is hardly room for a complete circular orchestra as at Epidauros. The auditorium has nine sub-divisions, with stairways between each, and one at each end. These stairs are 2 ft. 6 in. wide, and rise two steps to each tier. The lowest row of seats takes the form of continuous benches, with seats 16 in. wide, arms at each end next the stairs, and slightly sloping backs, 1 ft. 9 in. high. They are solid, and cut out of large blocks of stone from 4 ft. to 5 ft. long. Each bench is 16 ft. 6 in. long, and formed of three or four stones in length. The front of the lower part of these, under the seat, is cut back to allow of more room for the feet. They stand on a level with the orchestra, and are divided from it by the gutter, which is built of stone blocks, is 1 ft. 8 in. wide by about a foot deep, and falls towards the west. The space between benches and gutter, a foot wide, is very narrow, hardly enough to let one person pass another. Round the orchestra side of the gutter is a stone kerb, presumably level with the floor; nothing remains to show what the covering of this floor has been; it was probably merely beaten earth, as at Epidauros. No traces have been found of a base stone to receive the central altar, although a trench was dug specially to search for this. Opposite each end of the auditorium, and a few feet within the orchestra, two circular pedestals have been found; these measure about 2 ft. 6 in. in diameter, and have bases and capitals, as well as inscriptions, showing that they supported statues. As yet, however, the statues themselves have not been brought to light, but they may lie hidden in the adjacent masses of earth still to be removed.

Behind the front benches runs a passage-way 3 ft. wide, entered from each end. This must have been the only approach to the lower seats, as the gutter is not bridged across at the foot of each stairway, as we find it in the Athenian theatre, to allow of the people passing out and in through the orchestra. The seats behind are merely plain stones, 12 in. wide and about 15 in. high, slightly hollowed in front, and standing up about 4 in. from the footways, which are 18 in. wide. The footways and seats are not cut out of one stone, as at Athens, but are separate pieces.

As the one passage and the narrow stairs do not seem to provide a sufficient access to the whole of the upper part of the theatre, it is possible that there may have been end staircases; the existence of the double retaining walls some distance apart seems to supply a place for these, but this problem wants working out by further excavation. These double retaining-walls only commence about 50 ft. or 60 ft. back from the front of the auditorium, and the single wall which serves on each side as far as that point, is finished with a broad raking coping splayed at the sides and about 2 ft. 3 in. above the line of steps adjoining; this in its turn abuts against an oblong pedestal with cap and base, and which is lineable with the first row of plain seats behind the passage.

A most interesting discovery has been made in the series of inscriptions cut in large letters on both sides of the backs of the front benches. These inscriptions are of two dates, and, of course, will be published in detail by-and-bye. The earlier one records the donation of the seats themselves; the later, the names of the tribes to whom they were allotted. This may refer either to the benches only, or to the whole tier of seats behind them as well.

The remains of the Greek stage consist of a series of courses of stone setting in from the front edge irregularly like steps, but broad and narrow alternately, and which run straight along the face of the orchestra. The lowest one is about 1 ft. above the level of the orchestra floor and the top one about 2 ft. higher; 15 ft. back from this line is the main outer wall of the stage 2 ft. 6 in. wide, and with cross walls at right angles opposite the ends of the benches. In this outer wall are traces of three doorways, the centre one projecting outwards about 2 ft. from the wall. The threshold of the east side door remains in position and shows the sinkings for the hinges and rebates for the wood and bronze covered jamb linings. This door has been 5 ft. wide, and the central one, of which only the foundations remain, was possibly 1 ft. or 2 ft. wider, and may have had pillars on each side. The level of this threshold is about 1 ft. higher than the top of the steps of the inner wall.

The inner wall of the stage extends along on each side as far as the line of the second row of seats of the auditorium. About 10 ft. in front of this has been discovered the wall of what must be a later stage of

Roman times. The top of this wall is 1 ft. above the orchestra floor, and thus level with the lowest step of the Greek stage. Fragments of columns have been found *in situ* on this wall and others lying near. These columns are 1 ft. in diameter; they have no bases, and have plain projecting fillets about 2 in. wide running up each side to allow of the insertion of the movable scenery in the spaces between the columns. The front faces show marks of chisel-dressing and the backs, which would have been hid behind scenery, are much rougher. The pieces found vary in length, so it is difficult to say what their total height has been. The wall on which they rest returns back to the line of the Greek stage at the ends.

Between the ends of the auditorium and the line of the original stage where we usually find the Parodoi or entrances, are, on each side, spaces about 30 ft. wide by 63 ft. deep from the face of the seats. These spaces are closed in across each by high walls which show no means of communication with the outside. In fact, it seems as if the ground beyond must always have been at a much higher level. What these spaces were used for has yet to be determined. At either end of the stage, at right angles to the long walls, are two passages which probably supplied the means of entrance to the orchestra in this case.

Outside the main wall of the stage, and parallel with it, have been discovered the foundation-stones of six pillars which point to the existence of a stoa in front. As the level of these bases is 2 ft. or 3 ft. below the cill of the door in the wall, there must have been a broad flight of steps down under the stoa, although no traces remain of supporting walls for these. Unfortunately, very few fragments of the superstructure of these stage-buildings have been found, and no reconstruction can be made of their architectural treatment; but we hope sufficient remains yet lie buried, which, when brought to light, will supply the necessary data, and make a reconstruction of the whole design possible.

This stoa has been superseded in Roman times by a large square atrium or court 220 ft. wide and projecting 175 ft. in front of the stage buildings. This has been enclosed all round by a wall, the outer stage wall having been continued for this purpose on each side.

In the interior on three sides are large piers 4 ft. 3 in. square, seven piers on front and five on each side, counting the corner ones. These are some distance in from the face of the outside walls, and the space between was probably roofed in and formed a covered stoa, the central part having been open to the air.

Scattered about are a number of drums of Doric columns, varying from 2 ft. 6 in. to 3 ft. in diameter, also one cap and portions of an entablature, having the characteristics of late Roman work. They are of porous stone covered with gesso, and it is quite probable that they belonged to this colonnade. Entrances have been discovered in the side walls of this court. The floor of the stoa was probably about the same level as that of the stage, the ground having been filled up and the foundation of the original stoa buried under.

Almost in the centre of the court, and at a considerably lower level, are foundation stories of four columns, which formed a square; one stone still bears a drum of a circular, unfluted pillar. These either belong to an early shrine which stood just outside the original stoa, or perhaps the colonnade went round the court as a terrace, with the central part at a lower level and approached by steps. Further excavations may throw more light on this, at present, rather complicated problem.

The outside walls of the atrium are well built of large squared blocks in courses, the stones roughly dressed with a hammer and projecting in the centre and cut in towards the joints. With the exception of the columns mentioned the stone generally is the rather coarse white-grey marble of the district.

A somewhat similar court is known to have existed in front of the Odeum of Herodes Atticus at Athens, and of many of the Roman theatres.

A short distance to the west of this court a large altar has been unearthed. It is about 36 ft. long by 6 ft. wide, and is built of metopes and triglyphs standing on a double-stepped base, the whole being of poros stone covered with gesso. None of the cornice has been discovered. It was probably one of the main altars of the city. Its design confirms Dörpfeld's theory regarding that of the great altar of Zeus at Olympia. Trenches were sunk west of this on the chance of finding traces of a temple, but without result.

A small altar has also recently been discovered east of the theatre. In this part many pits were dug where columns and other fragments showed above ground, but nothing of importance has been brought to light; the columns were mostly found to be out of their original position.

No further progress was made on the north side of the river, where operations had to be suspended early in the season owing to the standing crops of corn.

The gold ornaments discovered at the tumulus in the small, round, marble sarcophagus, and which at first were thought to be prehistoric, on further examination turn out to be of Roman or late Greek time. Nothing further of particular interest has been found here.

A number of general objects of pottery, terra-cottas, bronzes, &c., have been turned up from time to time during the progress of the works, but the collection contains nothing of any consequence.

It is probable that work may be continued in October, when it is hoped the whole area of the orchestra and stage buildings of the theatre may be completely cleared of earth, and an effective start also made with the sites on the other side of the river, which look very promising.

Meanwhile, the School is to be congratulated on the results of its first season's work on Greek soil. The site is a particularly interesting one to architects, and we look forward to getting, as the result of further excavation, much valuable information regarding the arrangement and design of the public buildings of a Greek city of the fourth century before Christ.

HYMERS' COLLEGE, HULL.

AS this competition has been decided, as it must necessarily have been, almost entirely on practical grounds, it is most to the point, in offering some remarks on the plans exhibited, to consider how they fulfil the practical requirements of a school of this class as now understood. The result of our inspection of the designs, mainly in regard to this quality of practical suitability, is somewhat of a surprise. The instructions to architects, supplemented afterwards by a general statement in reply to queries, were particularly minute and detailed. What was to be expected was a large amount of uniformity, if not of monotony, of treatment. The very reverse is the case. The designs are as different as can well be. They are the more interesting for that reason. But the fact that the competitors have found it possible to diverge so widely makes it all the more probable that they have ventured to work somewhat outside their instructions. A detailed examination shows this to have been the case in a large percentage of the plans. It is to be regretted. Numerous meritorious designs are put out of court at once; many because of disregard of the central instruction, viz., that the building must be constructed to admit of perfect supervision, and not a few because the cost of executing the plans was out of all proportion to the amount stated to be at the disposal of the Building Committee.

The one pivot of the whole of the instructions was stated by the assessor as follows: "The controlling idea in the arrangement of the plans is that of perfect openness to supervision, and generally to carry out the spirit of the hall-passage system thoroughly." The failure to grasp this condemns at least two-thirds of the plans. Out of thirty-seven competitors more than twenty made supervision difficult. The ways of doing it were varied. The first method, and the favourite one, was to build a wall between the administrative block and the hall, so that the headmaster, secretary, and porter should be unable to have any supervision whatever. No less than eleven designs contain this fault. A second set placed a pair of staircases in front of the windows of the headmaster and porter, with almost equal disregard of the requirements of those officials. This was done in two of the very best designs, those of "Three Stars" and "Minerva." A third set put the headmaster and his administrative staff far back from the hall, or round a corner, or separated from the hall by an entrance hall. This was the case in the artistic set of drawings marked "Wilberforce," which received the third premium. A few put class-rooms outside the hall, and therefore out of the reach of supervision. On these and similar grounds not less than twenty-three competitors seem to have disqualified themselves. The most extraordinary design is that of "Sic," in which the class-rooms are represented as flying out from the central hall like the spokes of a wheel; the author of this design has succeeded in introducing no less than six corridors and four staircases.

A very general misconception appears to have prevailed as to the functions and utility of the central hall. The very name, "hall-passage," should have shown what it is intended for. The hall is to be minimised, therefore, not to be emphasised. And not only for reasons connected with scholastic management, but on grounds of expense. The one great flaw in the so-called "hall-passage" type, as opposed to the old corridor type of school, is that while, on the one hand, the advocates of the central hall hold that a hall is of very little value nowadays; on the other hand, in order to avoid corridors, they are obliged to build their central hall of inordinate size. Surely, then, the first consideration of the designer should be to get the hall not as large, but as small, as possible. This has been the last consideration with most of the competitors. Twenty-one have constructed halls of 5,000 to 8,300 ft. area, the assessor's requirement being a minimum of 4,000 ft. Many of the halls, moreover, to obtain fine effects, externally and internally, are unnecessarily lofty, and, consequently, costly. Very beautiful halls, indeed, many of them are, especially that of "Three Stars," which shows an interior that seems to be a reminiscence of a Belgian church. However, it is needless to say that the temptation to make a fine feature of the hall was a very strong one. Those who have succumbed to it have thereby raised the cost of their building out of all bounds. The successful firm, Messrs. Botterill, Son, & Bilson show a hall of 4,232 ft. area, with an estimate of 14,970*l.* for the complete block of buildings. "Three Stars" has a hall of 5,000 ft. area, and a total cost of 20,000*l.* The lofty hall of "Balbus" helps to bring up his total to 27,200*l.* Matters have been made worse in many cases by the construction of spacious corridors all round the hall, still further increasing its area, height, and cost.

Another problem that has vexed the competitors has been the position of the staircases leading from the gallery into the central hall. Only two designs contain the right solution. The solution depends on three points. First, the staircase must not encroach on the area of the central hall. Secondly, it must not be constructed to block the inspection windows of the head-master, porter, or assistant-masters. Thirdly, it must not be constructed on the west side of the hall, for the great mass of the class-rooms should be on the east side. The successful design had it right; so also had Mr. Wigram ("Balbus"), who obtained the second premium. The proper position for this main staircase is face to face

with the windows of the administrative block, so as to be under perfect supervision. Some placed it in the very centre of the hall; a few round a corner in a corridor. The following designs seem to have been most successful in carrying out the spirit of the hall-passage plan: "Supervision," "Balbus," "Aula" (Messrs. Beazley & Burrows), and "Æquo Animo" (Mr. Norman M. Brown), or, as the Hull printers have it, "Œgus Amino." Of these, that of "Supervision" is assessed, as before said, at 14,970*l.*: that of "Aula" at 20,900*l.*; that of "Æquo Animo" at 22,400*l.*; that of Mr. Wigram at 27,200*l.* There is also a good plan by "Quodlibet." "Supervision" is the only one of the five which at all approaches the sum mentioned by the assessor, 10,000*l.*

Externally there is no place for towers. Several competitors have introduced them. Towers have no business in a hall-passage plan. They do not grow out of it, or point to it, and they enormously increase the expense. The tower is unnecessary in the excellent plan of "Balbus," and puts his design out of court by the additional expense entailed. The other premiated design, "Wilberforce," (Messrs. Chorley & Connon, of Leeds,) also has a highly ornate and costly tower. In some cases the towers seem to be present merely as attractions to the eye of the Committee-men, the architect not in the least expecting them to be built.

Very few of the competitors have been able to provide, for 10,000*l.*, more than a central hall with eight class-rooms. The successful design, with a few others, offers twelve class-rooms. "Balbus" does not propose to build even the central hall at first.

Good as the ground-plans of "Supervision" and "Balbus" are, a careful study of them suggests several improvements. There are at least three matters in which both have erred. It is only fair to add that they erred in accordance with instructions. In the first place, the lavatories are badly placed, in a corridor or behind a staircase, and therefore being out of reach of adequate supervision, the arrangement is condemnable, as being contrary to the spirit of the hall-passage plan. Boys' lavatories should not be placed in the central block at all, but among the external offices; partly to have no slopping of water in or near the central hall, and partly because when boys need to wash their hands,—viz., at the end of games,—the porter is outside the building, supervising the games, urinals, &c. The porter is not supposed to be in the hall, except when the boys are all in the class-rooms or hall. When they are out of doors, he must be. The supervision of the hall, with its cloak cupboards, would, most properly, be entrusted to a master or masters in the half-hour or so before school, when the pupils are allowed to come early for their games. Secondly, the cloak-room attached to each class-room on the ground-floor is objectionable. The addition of these cloak-rooms very greatly increases the area of the class-rooms, and consequently the area and height and cost of the internal hall. The smell of wet clothes would probably find its way into the class-room. And during the half-hour before school begins, when the class-rooms must be kept locked, the cloak-rooms would be inaccessible to boys who wished to deposit their books and overcoats before joining the games. On every ground the system of cloak cupboards in use at St. Paul's School, by which each boy has a lock-up cupboard of his own, is far preferable. It is approved by Dr. Abbott, and Mr. Walker finds that it works well. A special merit of the cupboard system is that since each is fitted with a small shelf, a boy can deposit on it part of the large stock of books which is required in the higher forms of a public school, and for which sufficient space cannot be found in the ordinary box-desk. These cupboards should be arranged around the walls of the hall. If more room still is required, they may well be arranged between the piers of the central hall on which the three galleries rest. As this second set of cupboards would face the inspection windows of each class-room, from which each master has a view of the hall, they would be perfectly under supervision. Moreover, they would form a screen about 5 ft. high, separating the central space of the hall from the corridors running round it, and thus securing privacy in the central space of the hall, when examinations or prayers are going on there; for boys in the centre of the hall, when seated, would be unable to see over the screen of cupboards thus formed. A third error is to design all the class-rooms of the same size. In no school are the classes all of equal size; nor should the class-rooms be. The highest class, composed of boys on the eve of entering the University, tends to be small. The lowest class is usually small for another reason; it is composed of young children, and they require too much individual attention to allow of many being placed in the same class. Therefore, at least two of the eight class-rooms on each floor may be diminished in area, without making the block in any way less adapted for use. This diminution of the area of the class-rooms again means a corresponding diminution of the area, height, and cost of that *article de luxe*, the hall. In fact, by cutting away the cloak-rooms, putting the lavatories out of doors, and curtailing the size of two class-rooms on each floor, the area of the central hall of a two-story school for 500 boys may be brought down to 3,200 square feet.

Messrs. Botterill, Son, & Bilson propose to lay wood blocks in the hall, where no one ever treads except at prayers or examinations, and noisy, boarded floors in the class-rooms, where, of all places, noise is to be avoided. This arrangement should be reversed. The hall corridors, indeed, need to be either wood blocks or granitic cement; but not the area within the hall piers. From considerations of cost they lament that they can offer nothing but open fires by way of heating; and, in spite of their agreement with Sir Henry Roscoe's pamphlet, they plaster the class-room walls. It is to be desired that the Governors of the school should not allow a plan, in other respects so admirable, to be spoiled for want of adequate funds to secure proper heating and pure air. A minor point is the deficiency in urinals: the percentage of one for twenty-two boys is far too low. At most schools there is a break in the middle of the morning and afternoon schools, and a crowd collects round these offices, and unpleasant results follow. With the modifications suggested above, the two first designs are admirable instances of planning, and the selected design fairly represents the furthest point of excellence which school planning has hitherto reached.

THE TOWN HOLDINGS BILL.

THE principle of this Bill is one which we have for a long time consistently advocated. It is that compensation should be paid by landlords to tenants for improvements made by the latter which are of permanent benefit to the landlords' property. The Bill itself is a practical result of one branch of the interim report of the Town Holdings Committee of the House of Commons, though it seems to go somewhat beyond that report. In that document it was recommended that compensation should be made for improvements made by a tenant "for the purpose of carrying on his trade or business." By this Bill compensation is to be paid to tenants for any kind of permanent improvements, not necessarily made for the purposes of business. This is just. For it is unreasonable to limit compensation for improvements to those made for business purposes: a tenant of a dwelling-house has on every ground as much claim to be recouped money he has spent on premises, some portion of which results to the benefit of the landlord, as a tenant of business premises.

The Bill is confined in its operation to future tenancies, so that for many years it will not have the large effect which would sooner or later be the case. It also guards against persons contracting themselves out of its provisions, since "any contract, agreement, or covenant made by a tenant" by which he would be deprived of his right to compensation is null and void. Compensation is also limited to improvements mentioned in the schedule to the Bill, which is as follows:—"Such improvements *bond fide* made for the purpose of carrying on a business, or otherwise, as may have added to the permanent letting value of the premises. Any work, outlay, benefit, improvement, or advantage executed, done, or accruing (during the occupying tenancy by the occupying tenant, and his predecessors in occupancy) in, to, or upon the holding, whereby, or in consequence whereof, the holding would, in the opinion of the arbitrator in the Act mentioned, increase or augment the amount paid as rent by the occupying tenant of the holding, if the same were let for a period extending over seven years from the determination of the tenancy of the occupying tenant to a hypothetical tenant or tenants on the same terms as regards tenancy as those held or enjoyed by the occupying tenant at the time of the determination of the tenancy."

As regards the second part of the schedule, we do not see why its wording should not follow the latter part of the first portion of the schedule, and give compensation in respect of any addition to the permanent letting value of the premises. There appears also to be no clause in the Bill providing that compensation shall not be paid if the full value of the cost of the improvement has been obtained by the tenant before the expiration of his tenancy. It is quite conceivable that an improvement, whether in a trade or a domestic building, might be so used by the tenant that before he leaves he will have repaid himself the cost of the improvement. In such a case it is questionable whether the tenant should receive compensation, for he would then be money in pocket, whilst the object of the Act is to prevent him from being money out of pocket. Two months' notice of an intended improvement must be given to the landlord; if no agreement as to the improvement is then made between the tenant and the landlord, or if the landlord does not agree to do the improvement himself, the tenant may proceed to do the work, and will be entitled to compensation in respect of it at the expiration of his tenancy. Such is the basis of this Bill. That it will require some amendments in Committee we cannot doubt. Section 7, for example, requires to be broken up, and section 6 is at present unintelligible. We cannot but think that the word "not" is omitted before "unreasonable," and that it is intended to exempt from compensation improvements which the landlord has not unreasonably refused to allow. It may perhaps be as well to add that the Bill contains provisions for estimating compensation in disputed cases by means of arbitration. That this Bill must ultimately become law we cannot doubt; it has for a precedent the Agricultural Holdings Act; and it is moderate and reasonable. It does not interfere with existing tenancies, and it leaves abundant opening for landlords and tenants to make agreements between themselves in regard to improvements. It need, in fact, never come into operation at all, unless tenants or landlords behave in an unreasonable manner.

NOTES.

THE Railway Commissioners had a case before them last week in which a railway company had objected to dissect certain rates on the ground that the applicant was not a "person interested" within the meaning of the Acts. The counsel for the applicant argued that every one was interested in rates which practically competed with those charged to him, and that the applicant need not be paying the particular rate required to be dissected, since it is not those who pay exceptional rates, but those who do not, who

are usually the most concerned. Judgment has not yet been given in this case, but Mr. Justice Wills indicated his sympathy with the applicant by his remarks during the hearing of the arguments. For one thing, he made a suggestion which may advantageously be noted by others wishing to obtain similar information. He remarked that all difficulty would have been avoided if some friendly customer at the other end had been requested to ask for the required particulars under section 33. It was explained that application had been made as suggested, but without effect, the company stating that, inasmuch as the rates did not exceed the authorised maximum, it could not be said that any terminal charges were included therein. Mr. Justice Wills' rejoinder to this was still more encouraging to "persons interested." He said that the Court would not be so strictly bound by the letter of the Act as to assume that valuable services were rendered by the company for nothing, and they would not be satisfied with such an answer. It frequently happens that the letter of the law is held to be even more binding than its spirit and intention, and we are glad to note that the President of the Commission has such a regard for the latter. There are exceptional circumstances connected with the case in question which explain in some measure the reluctance of the railway company to disclose the facts, but there is seldom any difficulty now in obtaining information of this nature. The difficulty is, at present, to make any use of it when obtained, as the charging powers of the railways companies are so uncertain. When the new schedules are settled, however, and have received Parliamentary sanction, these powers will be more clearly defined.

THE Committee of the House of Commons on the Strand Improvement Bill rejected the principle of "betterment" on Monday last. It must be pointed out, however, that they strictly confined their rejection to its inapplicability to the facts of the present case. In other words they do not condemn the principle, but only its application. It may be that they do in theory privately condemn it, but it was not necessary for them to go so far openly, because they do not consider that the principle was properly applied. But it cannot be disguised that one of the chief difficulties of the "betterment" principle is the difficulty of applying it practically and deciding what the area of "betterment" is to be. If, by an improvement, a house is made lighter, there is here a direct improvement, the value of which is capable of being ascertained. On the other hand, to enclose an area and say that this area is improved, and beyond there is no improvement, is so arbitrary a method, and must always leave matters so uncertain, that this alone must render the principle very difficult of practical application. The Committee were to meet to consider the general clauses of the Bill on Thursday afternoon, as we were going to press.

FROM a paragraph that has been forwarded to us from a Hertfordshire paper, we observe that there is a talk being made about setting up a monument to Lord Grimthorpe in commemoration of his munificence—

> "Firstly, because he has preserved and replenished, with unstinting bounty, a fine old Parish Church; and, secondly, because for many sucessive years he has been the cause of thousands of pounds per annum being circulated in our midst. It need not be pretended that, in order to concur in this idea, anyone and everyone must perforce think Lord Grimthorpe's architectural style unassailable, or his authority unimpeachable. All that we are urging is that those who exercise fairly their faculties of observation and reflection must perceive at once how tangible and real are the public obligations of St. Albans to the Abbey restorer."

The gratitude to Lord Grimthorpe for having "circulated money in our midst" while engaged in defacing a great building, is truly English. But the good people who argue in this way have missed the real point of the case. Lord Grimthorpe has by his own action abandoned any claim to recognition or admiration which he might have had under different circumstances. As we pointed out long ago, if he had given his wealth to the repair and partial rebuilding of the church under the hands of an architect competent to do justice to such a building, he would have been a great public benefactor and would have deserved and received the gratitude due for such munificence. To gratify his own obstinacy and vanity he persisted in being his own architect, in undertaking a task for which he was perfectly unqualified, and in making a great Mediæval building a plaything for the exhibition of his own bungling efforts at architectural design: a proceeding which, as we have before said, we believe would not have been permitted in any other civilised country; certainly not in France or Germany. However, if the grateful tradespeople of St. Albans, among whom Lord Grimthorpe has "caused money to circulate," are bent upon setting up a monument to him in the neighbourhood of the cathedral he has defaced, we will recommend them an appropriate motto: let them adopt that to Wren,—"Si monumentum requiris, circumspice." Rightly read, nothing could be more neat, more to the point, or more cutting.

THERE seems no question that the removal of most if not all of the gates which bar various thoroughfares in London, at the will of Ducal owners, is only a question of time; it is against the convenience of the majority of the public, unquestionably. But we are surprised at the light-hearted manner in which the Select Committee on the subject, at their meeting on Tuesday last, settled that no compensation was due to any one for the removal of such gates. No one who knows the neighbourhood in which the Duke of Bedford's rather numerous gates are found can doubt for a moment that the removal of these gates would depreciate house property in their vicinity. We know of one case where a house in Upper Woburn-place was recommended by the owner of the lease to a proposing tenant, mainly on the ground that being close to the gates, it was for the greater part of the twenty-four hours as "quiet as in the country," no continuous through traffic being possible. This quietness is one of the greatest and rarest boons to be had in a London dwelling; surely it cannot be pretended that it is worth nothing to the value of house property.

HERR KONRAD WERNICKE'S monograph on Greek vases with "love names" * has been long looked for, and its appearance will be welcomed by all students of ceramography. It is the natural sequel of Dr. Klein's well-known "Meister-signaturen." The first essential was to collect all known instances of artists' signatures; that done, it was soon seen to be imperative that all instances of inscribed "love names" should be in like manner gathered together. The book is, of course, in the main a catalogue, but one chapter is devoted to the scientific results deducible from this catalogue, and here we have a substantial contribution to the history of ceramography. Briefly, Herr Wernicke finds—1. That these "love names" do not appear indifferently at all periods of vase paintings, but are almost exclusively confined to about one century,—*i.e.*, simply from 550 to 450 B.C.,—*i.e.*, the late black and early red figured periods. 2. That the practice of inscribing love-names was almost wholly confined to Attica. 3. That, as a rule, the same love-name refers to the same person and not to a succession of persons bearing the same name,—a conclusion most important for chronology. 4. That the names refer sometimes to the obscure favourites of the vase-painters themselves, but far more frequently to beautiful boys and youths aristocratic birth. This custom of inscribing vases with the names of famous beauties, Herr Wernicke reminds us, was not confined to Greeks; it obtained also among the makers of majolican ware in the first half of the sixteenth century A.D., in whose wares frequently appears a female head inscribed, "Julia bella, Angelica diva," &c.

* "Die griechischen Vasen mit Lieblings namen. Eine archäologische Studie von Konrad Wernicke." (Berlin: Reimer. 1890.)

THE "programme" of the biennial meeting of the combined societies of German architects and civil engineers, which will be held at Hamburg from August 24 to 30th next, shows that, besides a series of lectures, among which those on "Style," "Hamburg," "Modern road-building in regard to the disposition of subways," "The North Sea-Baltic Canal," and "Modern wide-span bridges" promise to be of special interest, ample preparations have been made for the facilitation of an inspection of the new harbour works, public buildings, and private residences of the city, as well as of the sights of the neighbouring towns, Lübeck and Kiel, and of the works on the new North Sea-Baltic Canal close by.

WE have received some specimens and a description of a material called "Tectolith," which appears to possess some important qualities as a covering material, somewhat in the same manner as concrete slabs have been used in this country. It is described vaguely as "a mixture of various materials, chiefly magnesite," but it appears to have come into considerable use in Germany, for the construction of houses and goods-sheds on railways, and for exportation in the shape of portable houses to the colonies. These are made of slabs of Tectolith on wooden framing, on the same principle as the Lascelles concrete cottages; or they can be fixed on iron framing, if greater durability is desired; they can also be used for flooring, for which purpose they have been already applied in some factories in Saxony. We understand that Messrs. Kirkaldy & Sons have obtained very satisfactory results in testing Tectolith for strength (which test reports, however, have not been forwarded to us), and it is claimed for the material that it is one of the most fire-resisting of materials, and has stood very severe tests in this respect. Besides being used in hard slabs, it can also, by a different mixture of the ingredients, be produced in a softer consistency, suitable for use in pugging or deadening sound in floors and partitions.*

THE case of Rendle *v.* J. Edgcumbe Rendle & Co., Limited, which was tried on Saturday last, and is reported in another column, brought into court the well-known glazing business of which many of our readers have had practical experience. The dispute was one of a personal nature, the plaintiffs being the trustees of the will of the late William Edgcumbe Rendle, and the manager of the defendant company, being a son of the "original" Rendle. The Judge decided in favour of the plaintiffs, and granted a perpetual injunction to prevent Mr. J. E. Rendle from using his name or doing anything to make the public believe that he had succeeded to W. E. Rendle's business. Many of our readers have probably received prospectuses of the defendant company, and this case should be a warning to them to be careful in the matter. Into the unfortunate personal details of the case it is unnecessary for us to enter. It is sufficient here to state, as the result of the case, that Mr. J. E. Rendle has now no interest in the original firm.

NO. 9, St. James's-square, is in course of being altered and repaired † for the members of the Portland Club. This finely-built house, recently occupied by Miss Hoare and Miss Prince, stands on the northern side of the square, with its main entrance in York-street, western side. The walls are unusually

* We understand that a company is being formed for manufacturing the material in this country. It appears worth a trial.

† Mr. F. G. Davis, of 54, Theobald's-road, W.C. builder and contractor.

substantial; all the principal rooms are fitted with doorways carrying richly-carved pediments,—the doors, in pairs, having a depth of 2 ft. and more between them,—and these rooms, up to the third floor, are handsomely panelled and wainscotted. Two large apartments, fronting the square, on the ground and first floors, will serve, respectively, as the dining and card rooms. The chief staircase carries a noble balustrade of mahogany. This is reputedly the actual house that was inhabited, in Queen Anne's reign, by James, second Duke of Ormonde, (grandson of Dryden's "Barzillai") who suffered attainder for his share in the "'15." In this case, and appearances favour the statement,* it must be one of the original "thirteen or fourteen great and good houses" for the erection whereof, upon the Earl of St. Albans' fund, a warrant, dated September 23, 1664, was issued to Abraham Cowley and Baptist May—whence, perhaps, the neighbouring Babmaes-mews, in Jermyn-street—by name, at first, of the Piazza. It is known that the Duke lived on this site, and that his house was sold by the Crown for 7,500*l.*, being valued at 300*l.* a year. In his "Journey Through England," De Foe refers to it "as a noble palace, now purchased and finely adorned by the Duke of Chandos." The Duke of Chandos, it seems, thereupon abandoned his scheme for building a vast mansion along the northern side of Cavendish-square.† Ormond-yard, in York-street, commemorates the name of the attainted Duke, who went into exile at Avignon, with a pension from the Court of Spain. Dying on November 16, 1745, he was buried in the family vault beneath Henry VII.'s Chapel, at Westminster.

THE Holmewood estate, Huntingdonshire, the seat of the late Mr. William Wells, will be put up for sale by auction at the Mart on July 16 next. Yielding a rent-roll of about 7,000*l.* a year, this property extends over 6,400 acres. It comprises various farms and homesteads, some of them upon land reclaimed from the fens, together with the whole of Denton and Holme parishes and nearly all of Glatton. As is not commonly known, the last-named village gave a name to one of our now obsolete ironclads. Glatton is supposed to be a corruption of the British glâstanen, or later glâsten, the holm-oak. It is stated that the draining of Whittlesey Mere, some forty-five years ago, was done at Mr. Wells's expense. Amongst his collection of old plate sold at Christie's on Tuesday, June 3, were the thurible of silver-gilt, with silver chains, and the "naviculare," or incense boat that were then dug up in the mere, and are supposed to have belonged to the wealthy Benedictine abbey at Ramsey, but a few miles distant in the same county. The former was bought for 1,155*l.*, the latter for 900*l.*, the boat being regarded as of the Early Tudor period, the thurible as of the end of Edward III.'s reign.

IN our list of "Tenders" of last week were included two tenders for carrying out some alterations, &c., at the "Bag o' Nails," now No. 6, in Buckingham Palace-road. This is a representative of one of the old taverns for which Pimlico was once famous; such as the "Gun" (demolished in 1857), the "Goat and Compasses" (dating from the Commonwealth), and others. The sign is a corruption of Ben Jonson's "Bacchanals." The original device consisted of a wood satyr, attended by a band of choice spirits. These latter, when the satyr was repainted black, became "translated," and the sign for a while was vulgarly known as the "Devil," the cloven feet being still conspicuous.

SOMETIME ago the classical temple which surmounts St. Bernard's Well, Edinburgh, was restored, at considerable cost, by the late Mr. William Nelson, publisher. The restoration was thorough, including a new marble figure of Hygeia, mosaic inlay for the domed roof, tesselated floor, and extensive terracing, &c., upon the grounds. It appears that doubts have arisen as to the real character of the water, and, in consequence of this, a customer of a firm of druggists in the city requested them to make inquiry into the matter. It had been remarked that there was an absence of the odour of sulphuretted hydrogen, which forms the chief characteristic of the water, and the presence of which constitutes its peculiar virtue. A sealed sample of the water was sent to Dr. Stevenson Macadam for analysis, without informing him of the source from which it came. After giving details of his analysis Dr. Macadam concludes:—"These results prove this sample of water contains in solution much saline matter, and is very hard in character. It further holds in solution substances derived from the decomposition of putrescent organic matters, and which render the water very impure and unfit for domestic purposes or for the watering of cattle." The City Analyst, however, assures the public that "the result of repeated analyses within the last few days of this water, at various hours, is to show that its constitution is, if anything, purer than it was at the opening of the present well, and that there is a total absence of anything indicating sewage contamination." The builders, Messrs. R. Thorburn & Son, who were employed in the restoration of the well, write to the *Scotsman* as follows:—

"When taking down the stonework of the old pump, Mr. Nelson directed us to see the tank from which the water was drawn, and, if necessary, have it cleaned out. Accordingly, we had the pavement floor lifted, and found underneath a space, with a rocky surface, the full size of the well-building, intersected with walls carrying the floor above, and in the centre a barrel sunk down in a cavity of the rock. Under instructions of Mr. Lessels, architect, this barrel was taken out and the cavity cleaned, when the water was observed coming up through the bottom in three well-defined feeders, all on the north and east sides (two next the river and one a little to the south and east). After being thoroughly brushed and cleaned out, the bottom of the cavity was covered with 6 in. of clean broken stones, on which was set a cylindrical tank made of two salt-glazed spigot of faucit pipes, jointed with cement, standing faucit downward, and having the bottom of the lowest pipe filled in with a disc of Portland cement, through which two holes were pierced. Between this tank and the walls of the cavity was packed clean broken stones for eighteen inches of the height, at which point three holes were cut in the cylinder. The remaining height up to the floor of the space under well-room was tightly packed with stone and cement. The top of the cylinder or tank finished about 9 in. or 12 in. above the surrounding rock by being covered over with a flag bedded in clay and pierced in the centre for the pump pipe. There was always a good deal of water on this rocky floor, apparently coming from the high ground and mill lade to the south, and having made certain that it could not get into the tank, we cut an overflow hole through the wall of the well to the north to allow of its escape to the river. While the tank was being fitted up, visitors were supplied from a cistern previously filled; and it was a matter of remark that in a few hours the water had lost its peculiar odour and flavour."

The mill lade to the south, from which it was "made certain" that no water could get into the tank, is little better than a common sewer, and the certainty of the measures taken for preventing contamination from that or any other source should be carefully investigated.

TWO additional galleries of the Scottish National Portrait Gallery were opened to the public on Saturday. These contain a large and interesting collection of engraved portraits of Scottish historical characters, drawings of old Edinburgh by the late James Drummond, R.A., a set of engravings illustrative of the art chiefly of French masters of the seventeenth and eighteenth centuries, and casts of classical celebrities. These last formed part of what is known as the Albacini collection, purchased in 1839 by the Board of Manufactures for the Trustees' Academy.

THE eastern half of the building in Queen-street, Edinburgh, which is to be appropriated by the Scottish Society of Antiquaries, is not yet in a fit state for occupation, but we are given to understand that it will probably be so before the lapse of another year.

THE Stover collection, the property of the late Edward, Duke of Somerset, will be put up for sale by auction, at Christie's, on June 28 current. The pictures for the greater part are by old masters of the Dutch and Italian schools, such as Hobbema, Backhuyzen, and Adrian Ostade, Bronzino and Claude. There are also Paul Potter's "Dairy Farm" (1646), formerly in M. de la Hante's gallery; Reynolds's portrait of Anne, eldest daughter of James, fifth Duke of Hamilton, who married, in 1761, Arthur, first Marquess of Donegal; Gainsborough's Duke of Hamilton and his brother, Lord Douglas, afterwards summoned to the House as Duke of Brandon. The claim of the elder brother, James, seventh Duke, who died, unmarried, in 1769, to the Douglas estates was disallowed on appeal to the Lords in the famous suit known as the Douglas cause. Also a female portrait by Hoppner; and portraits by Van Dyck (Queen Henrietta Maria), Lely, and Dobson; together with Rubens's sketch for his "Daniel in the Lions' Den." These paintings were purchased by Archibald, ninth Duke of Hamilton, who died in 1819, and given by him to his daughter Charlotte, wife of Edward, eleventh Duke of Somerset. Thus they passed to the late nobleman, who, when Lord Seymour, married, in 1830, Jane, granddaughter of Richard Brinsley Sheridan, who took the part of the Queen of Beauty at the Eglintoun Tournament.

THE architectural and topographical library of the late Thomas Henry Wyatt, F.S.A., was sold a few days since by Messrs. Puttick & Simpson in their auction-rooms at Leicester-square. Amongst the more important works were included the following: — Nash's "Collections for the History of Worcestershire," 1781-2; E. Hasted's "History of Kent," 12 vols., 1797-1801 (Hill, 5*l.* 5s.); Winkles's "French and English Cathedrals," 4 vols., 1836-7 (2*l.* 16s.); G. E. Street's "Gothic Architecture in Spain," 2nd edit., 1869 (Quaritch, 1*l.* 12s.); A. W. Pugin's "Glossary of Ecclesiastical Ornament and Costume," roy. 4to, 1844 (Quaritch, 2*l.* 18s.); Dollman and Jobbins' "Examples of Ancient Domestic Architecture," 2 vols., 4to, 1858 (1*l.* 1s.); Dollman's "Priory of St. Mary Overie, Southwark," imp. 4to, 1881 (1*l.* 3s.); "Revue Générale d'Architecture," &c.; several volumes unbound, "Paris, 1840-77" (2*l.*); "Architectural Association Sketch-Book," vols. 3 to 12, 1869-80 (Batsford, 5*l.*); Richardson's "Old English Mansions, Plate, and Furniture," vols. Nos. 1, 3, and 4, imp. fol., 1841-8 (Batsford, 4*l.* 10s.); "Vitruvii de Architecturâ cum Emendationibus et Illustrationibus," A. Marinio, 140 plates, 4 vols., Rome, 1836—with King Louis Philippe's monogram on covers (1*l.* 2s.); V. Petit's "Châteaux de la Vallée de la Loire," 2 vols. imp. fol., Paris, 1861 (Batsford, 5*l.* 2s. 6d.); P. Letarouilly's "Edifices de Rome Moderne," 4 vols. imp. fol., Paris, 1843-57; F. Mazois's "Les Ruines de Pompei," 198 plates, 4 vols., atlas fol., Paris, 1812-38 (Batsford, 5*l.* 12s. 6d.); V. Place's "Ninive et l'Assyrie," with F. Thomas's designs for restorations, 82 plates, 3 vols., atlas fol., Paris, 1867 (Batsford, 4*l.* 17s. 6d.); James Neale's "Abbey Church of St. Alban," 60 plates, imp. fol., 1877 (Wyatt, 1*l.* 10s.); Pugin and Heath's "Paris and its Environs;" and C. Wicke's "Spires and Towers of the Mediæval Churches of England, 3 vols., imp. fol., 1853-9 (Quaritch, 8*l.*). Copies of Mr. Norman Shaw's "Architectural Sketches," with 100 plates of famous buildings in France, Italy, and Germany, 1858, and J. S. Cotman's "Architectural Antiquities of Normandy," 2 vols. imp. fol., 1822, were bought for 16s. (Berry) and 17s. (Parsons) respectively.

* We have since learned that No. 9, St. James's-square is *part* of the house of the great Duke of Ormonde. His house extended to Ormond-yard.

† Confer Mr. H. B. Wheatley's "Round about Piccadilly," 1870, *ad hoc*.

A MOSAIC has just been completed, from the design of Mr. Holman Hunt, by Messrs. Powell & Sons, as a reredos for the chapel at Clifton College. The subject is Christ discussing with the Rabbis in the Temple. Messrs. Powell have produced a fine piece of mosaic work, but the subject has not, in our opinion, been treated by the artist in a sufficiently decorative manner, considering the position it is intended to occupy; the head in the figure of Jesus is certainly too large for the body, and the whole would have been vastly improved by a simpler scheme of colour.

MR. DRESSLER has at his studio, in Chelsea, a copper relief representing the Holy Family, one of two for a side chapel of St. Xavier's Church, Liverpool. The panel measures about 4 ft. square. The Virgin and St. Joseph are seated on a panelled daïs with the Child between them. The background is occupied by arcading, the spaces being filled by a representation of the Deity in the centre, and angels playing on musical instruments on either side. The principal figures seem to have been carefully modelled; the weak point in the panel is the architectural background, which can scarcely be considered a success.

TWO elaborate cabinets, made by Boulle as a present for Philip V. of Spain from Louis XIV., are now to be seen at Mr. Ichenhäuser's, in New Bond-street. They were formerly in the Château de Mariemont, in Belgium, and are both of the same general design. The fronts of the various drawers are filled with representations of the victories of Philip,—a series of eight on each cabinet,—the figures being of tortoiseshell on a background of tin. Ebony has been largely used, and the bands of ornament, and the decoration of the circular columns at the angles, are of great delicacy of detail. The centre bay of the cabinet is made to open either door, the hinge being formed by the bolts attached to the locks, one on either side. Over the centre portion is a figure of Fame blowing a horn, and holding the monogram of Philip V.

THE idea so long entertained and acted upon in India, that engineers are the fittest persons to be entrusted with new architectural work in the country, though it has been somewhat modified of late years, seems to die hard. A correspondent in *Indian Engineering* of May 17 writes:—

"What are the wiseacres of the Allahabad Municipality thinking of when, having made up their minds that the capital of the North-West Provinces demands a town-hall as an illustration of its dignity and proud status, they repudiate the assistance of professionally-trained architects, and decide to entrust the design for their grand Hôtel de Ville to the assistant engineer who looks after their water-works. An accomplished and estimable young man I make no doubt. Still I hope I may be pardoned if I fail to see how having charge of water-works—even in Allahabad—can inform a man about the principles and practice of architecture *en grande tenue*, or render him an authority on that art."

THE ways of American journals are certainly interesting. We observe that the New York paper called *Architecture and Building* has been reprinting Professor Aitchison's lectures on Roman Architecture, of course from our columns, as with the exception of the first lecture they were communicated to no other journal. Not only does the American editor reprint them without a word of acknowledgment as to the source from which he obtained them, but even one or two editorial comments of our own on points in the lectures, printed as footnotes, are duly reproduced with the affix "Ed." at the end of them, leaving the reader to suppose that this is the comment of the American editor.

Erratum.—In "Notes" last week, line 3 of first column on p. 412, for Meadows *v.* Marshall" read "Meadows *v. Taylor*."

ARCHITECTURE AT THE ROYAL ACADEMY.—VI.

1840. "St. Swithin's Church, Hither Green, Kent": Mr. Ernest Newton. This is shown in a bird's-eye view, which gives rather too great a prominence to the expanse of roof; it is an exceedingly solid-looking building with massive plain buttresses and windows with equally massive tracery between them. The west end is rather oddly treated; there is apparently a narrow narthex between two deep buttresses, and above this what looks like a chimney rises in the centre of the front up to the gable, with a window on each side of it. What the meaning of this is is not apparent, unless it is a buttress to hold up the front, but as it has no visible base externally, and only rises out of the porch roof, it adds no appearance of stability. On the other hand the side aisle, instead of being a lean-to roof, is treated as a longitudinal gabled roof, the inner slope falling back against the nave wall. There is no particular objection to that, but the treatment of the west end of the nave is eccentric rather than effective, and rather spoils an otherwise good church. This drawing, being one with a high sight-line, is as usual hung at the very top of the wall as high above the eye as possible, so as to appear as if falling over. This stupidity about such a simple matter, which is constantly repeated in the hanging of the architectural drawings at the Academy, year after year, is quite inconceivable. Is there no one in the Academy who knows that a drawing looks best when viewed from the position nearest to the spectator's imagined position?

1,841. "An East-end Mission-house": Mr. E. W. Mountford. A prettily-executed pen-drawing; there is no plan, but we presume that the upper portion, with the windows beneath pointed arches springing from buttress to buttress, is an open-roofed hall, and the lower portion with the square mullioned windows consists of offices or small rooms of some kind. The building is picturesquely grouped, the different portions of it being distinctly marked, and the effect of the whole is suitable to its purpose and position.

1,842. "Hertford College, Oxford: New Hall and other buildings": Mr. T. G. Jackson. The prominent feature in this small drawing is an octagonal staircase lighted by a series of elliptical headed windows built on the rake following the stair line; a neat problem in masonry, but having to our thinking a rather crippled effect architecturally. The addition is entirely in keeping with its surroundings, which is an excuse for the flower-pot finials at the top, which otherwise we do not much sympathise with.

1,843. "Industrial Schools, Knowle, Bristol; Entrance Front:" Mr. J. D. Sedding. A reproduction from this drawing is published in the present number. It is exceedingly picturesque, though we question whether there is not a little too much determination to be picturesque about it, and whether it will not be thought in a few years rather an eccentric experiment. However, it is better than making a school a mere commonplace square mass of building, certainly; and this school has the merit of being homelike, as we think schools (especially Industrial Schools) should be, and not like jails or workhouses. No plan is given with the exhibited drawing, but we are enabled to append a plan in the present number, from which the relation of plan and design will be seen. A word is due to the drawing, a slightly-executed water-colour, which, however, in regard to feeling for colour tone, and composition, is one of the best things in the room. It is a pity that, with all these merits, the little cupola on the left, the most prominent object, should be crooked and out of drawing.

1,844. "Home of Rest, Littlehampton, Sussex": Mr. Halsey Ricardo. A good deal of the picturesque effect of this is due to the drawing, in which all the sides of brick piers in shadow are shown with every brick shaded dark, the front being left nearly untouched. This is a purely artificial effect, but it gives a look of originality and picturesqueness to a drawing. The building is characteristic enough in treatment; the upper stories oversailing and carried on large piers of brick wall projecting on the ground story.

1,845. "Proposed New Catholic and Apostolic Church, Westminster": Mr. John Belcher. Elevation plan, and section; the plan is cleverly treated on a long site with one end to a street cutting it at an oblique angle. The east end faces the street, and the entrance is by a door at one side of the chancel and a passage parallel to the latter. The central portion of the plan is treated as a hexagon, the piers opening out somewhat on the same principle as in St. Stephen, Walbrook; this space is roofed by a semicircular dome, a plain semicircle externally, but internally the treatment is of Late Gothic type, the dome having groining ribs, twelve in number; the springing of the dome is a narrower hexagon carried on arches thrown from centre to centre of the bays of the lower hexagon, across its angles. Externally we see a rather poor little gable with a Tudor type of traceried window in it; and a brick tower on which is bluntly set an iron and lead campanile contrasting picturesquely with the plain brickwork which carries it. The main arcade round the hexagon is treated with large Tudor shaped arches with the main portion of the "arch" perfectly straight in line from the apex to the small curve at the springing; not a very strong sort of arch nor very agreeable to the eye. There is however a great deal of originality and interest in this set of drawings.

1,846. "St. Mary's, Clumber; the side chapel": Mr. G. F. Bodley, A.R.A. A regulation coloured drawing of a regulation Gothic interior.

1,850. "British and Foreign Marine Insurance Company's Offices, Liverpool": Messrs. Grayson & Ould. This drawing is reproduced in the present number. It is an effective sepia drawing, with the two angles of the foreground buildings forming a frame to the principal one, and is a creditable attempt to give architectural effect to a business building, as well as a certain meaning in the decorative details, the ship keystones, the pictorial panels (of mosaic) contrasting the ancient with the modern ship. The tracery diaper over the second-floor windows has a good effect, but we fear there is rather a want of refinement in details, and the third-floor windows appear to belong to another building, and have no architectural relation to the rest of the detail.

1854. "New Grammar School, Bedford": E. C. Robins. This is an example of a kind of drawing not often seen at the Academy, a perspective view in which part of the exterior is broken away to show the interior construction. The portion shown is the great hall, with a lofty arcade and aisles, and galleries round it at two levels, with an open timber roof over. A plan is appended, showing that the school is one of the type in which the hall is really the access to and meeting ground of the class-rooms. These all open on the corridors and galleries, and the master's room and common room are at one end, opening on the great hall, with a daïs immediately in front of them reached by a few steps from the hall. The plan is an admirable one; the exterior design is what may be called "Collegiate Gothic" of a type now rather *passé*.

1,855. Offices of the *Glasgow Evening Citizen*: Mr. T. L. Watson. This, which is obviously with intention hung next to No. 1,850, is another example of the class of costly business buildings which are becoming so common now. It is a building of the "handsome" order, but rich and dignified in effect. The newspaper office only occupies a portion of the façade, being distinguished from the "*Citizen* Buildings" forming the other portion by a slight projection forward of the ground-floor story, which is treated with a Corinthian order of Renaissance type, between terminal pilasters, while the "*Citizen* Buildings" portion is treated with circular-headed openings with deep reveals and heavy panelled piers. Above the projecting portion of the ground story are bay-windows on the first-floor, over which the wall and cornice lines run through on the same plane. The top story below the gables is treated very richly, with round arches on low square piers, carved on the panels, the spandrels of the arches, and the large brackets supporting the main cornice being also richly carved. The plain masonry of the gable walls produces a good effect of contrast over this, though we do not like the dog-legged outline of the scrolls which diversify the corbie-steps. Taken as a whole, however, there is more power and originality of design about this than about most buildings of the type to which this belongs—that of the "handsome" street building.

1,856. "Triumphal Arch at Timegad, Algeria, Restored": Mr. Alexander Graham. A French architect would have given drawings of the entire remains as existing, so that one could see the basis of the restoration. An English architect who sends a drawing of a restoration never

thinks of that; and very probably, if he did, the Academy would not hang the drawings. All we can see is that there is a charming tinted water-colour drawing of a Roman arch with an order attached on either side of the archway in the usual fashion, and that it is shown with a great deal of truth and precision of effect, and need not have been hung so high.

1,859. "New Church, St. Peter's, Ealing; exterior view"; Mr. J. D. Sedding. It would take a long description to do justice to the extent of originality in this design; fortunately we can refer the reader to an illustration in the *Builder* of Nov. 16, 1889, for the general design, which, however, has been altered and improved in various details in the exhibited drawing. The ink-line drawing, like that of No. 1,777, is hasty and scrawly in style, but not without effectiveness. The treatment of the end window is remarkable; it is set deep under a great arch abutting against a kind of buttress turret on each side; two large plain deep buttresses stand edgeways to the window plane opposite the principal mullions, and are connected with them by a kind of small flying buttresses. Between these buttresses below is the segmental arched doorway, with a parapet filled with figures over it. The treatment of the tower with its arcades, with the angels filling in the spandrels over the window, is very rich and picturesque. The whole thing is a piece of real originality in design, which it is refreshing to come across after seeing so many repetitions of old forms, Classic and Gothic. It is to be regretted that the affectation of archaism in the drawing produces an effect of eccentricity which is really not inherent in the design itself.

1,860. "Pulpit, Siena Cathedral": Mr. Thos. Maclaren. This is a really beautiful specimen of pencil drawing, soft in general effect but clearly and decisively finished in detail. The bas-relief sculpture at the top is drawn with great care, and the capitals of the columns, and the smaller ornamental details, are shown very minutely and effectively. It is a pleasure to see such a drawing as this, at once artistic and architectural.

1,861. "Exeter College Chapel, Oxford": Mr. Cecil B. Roper. This is another of the ink-line drawings, similar to those by the same hand which were exhibited last year, in which an unusual degree of aërial softness of effect in line drawing is aimed at, and realised, by a system of working entirely in small detached strokes. The drawing is executed with great care and patience, and the resulting effect is exceedingly delicate, but there is rather a tendency to lose distinctness and meaning in the detail by this method, as in the treatment of the marble shafts. On the whole the style and effect are artistic rather than truly architectural, but the author may be said to have made an original hit in drawing.

1,864. "View of Premises, Wigmore-street": Mr. T. E. Collcutt. We may refer the reader to the *Builder* of May 24 for an illustration of this drawing, which is a line drawing. It is one of the best and most refined designs for a street front in the room, though perhaps the vertical striping with narrow slips of pilasters is rather over-done; but the details are all good and refined, and the drawing ought to have been hung lower.

1865, "New Buildings at the Cross, Chester;" Mr. T. M. Lockwood—an example of the modern reproduction of the old Chester timber style of street house. The drawing, a monochrome in sepia, is a boldly-executed one, but there is not much to distinguish the design from others of its type which have been carried out in Chester of late years. The timber-work is richly treated, in foliated panels, &c.; but the whole is a little heavy in effect. If local building acts permit the continuance of this manner of building in the streets of a town, there is something more to be done with it architecturally than has usually been done; and in this case the most unusual point, the projection of a stump of timber into the middle of a panel, is hardly a good method of treatment, as it is entirely at variance with construction; and this kind of building should be, emphatically, timber construction, treated in an effective and decorative manner, but still construction.

The Society of Arts' Conversazione is fixed to take place at the Natural History Museum (by permission of the Trustees of the British Museum), on Friday, June 27.

ARCHITECTURAL ASSOCIATION VACATION VISITS:

I.—SHIPLAKE COURT, NEAR HENLEY.

THE first vacation visit of the Association this year was made on Saturday by some thirty members to Shiplake Court, near Henley, which is now approaching completion, having been erected from the designs of Messrs. Ernest George and Peto, for Mr. Robert Harrison.

The house is charmingly situated on the high bank of the Thames, and commands an extensive view over the surrounding country to the south and south-west. The designs have been worked out in fifteenth century style, the materials used for the external parts being red bricks from Bracknell, and black headers for diapers, while the dressings and tracery are of Bath stone, which has been stained to bring it to a tint more harmonious with the red and black brickwork. By a careful selection of the bricks, the crudeness that might have been expected has been most happily avoided. Thick stone slates from the Forest of Dean are used for the roof, which is capped by a solid stone ridge. The entrance front has considerable charm and picturesqueness, and may certainly rank as one of the happiest efforts of Mr. Ernest George. The chief entrance is emphasised by carrying up a part of the building in a low square tower with an octagonal turret corbelled out from one angle, and this forms the central point of the grouping of this front.

The garden front, looking towards the river, is far more symmetrical in treatment, inasmuch as the greater portion of the façade is taken up by the great hall, which forms the chief feature in the internal arrangement. A balustraded terrace carried out in flint work, and banded with red bricks, forms an important part of the design of the garden front. Internally, as already mentioned, the great hall is the chief feature of the plan; this is 70 ft. in length, and has an open-timbered roof with moulded purlins and wind braces, while the walls are panelled in oak to a portion of their height, and finished with stone ashlar above this. A screen and minstrels gallery are intended at one end of the hall, but these are not yet in position. In the centre of the long side opposite the windows, is an important feature in the projecting fireplace and chimney, which is carried out with a considerable amount of detail in warm-coloured Hamhill stone.

The dining-room and billiard-room are at one end of the hall, and library and morning-room at the other. The principal staircase was at the time of the visit not sufficiently advanced to allow us to form any adequate idea of its effect, but from the drawings which were exhibited, and the detail already commenced, there can be little doubt that this will be yet another of the many charming features to be found in the house. Besides the main building, stables have been erected at some little distance, and in connection with them one of the most notable features in the composition, the great tower devoted to the storage of water and provision for the electric lighting plant consisting of boiler, engine, dynamo, and accumulators; this tower contrasts very notably with the design of the house tower and the church tower adjacent, by reason of the very foreign character of its general outline; the object of the designer has probably been to avoid competition between these three towers, and to produce a harmonious group of dissimilar elements. The entrance-lodge next the main road has been treated in a Jacobean spirit, with dark-stained woodwork and white rough cast above a ground floor of red brick; here again stone slates have been used, though of a finer variety (from Boughton-on-the-Water) than those on the main house; we are inclined to think that a tile roof however would have been more happy in this case, as there is a decided want of contrast between the tones of the roof and of the rough-cast in the upper story of this lodge.

The bailiff's house and dairy have also been erected from Messrs. Ernest George and Peto's designs; this block is kept entirely subordinate in design to the main building, perhaps too much so, as, *per se*, it rather lacks interest in design from the apparently too great regularity of the black diaper and the dulness of the dark-stained wood window frames.

The Artists' Benevolent Fund.—The eighty-first anniversary dinner of this Fund is fixed for Wednesday, June 25, at Freemasons' Hall, Sir Richard Temple in the chair.

THE INSTITUTION OF CIVIL ENGINEERS:

ANNUAL REPORT.

The annual general meeting of corporate members—"to receive and deliberate upon the report of the Council on the state of the Institution, with the annual statement of the accounts and to elect the Council and officers for the ensuing year"—took place on Tuesday, the 3rd inst., Sir John Coode, K.C.M.G., the President, being in the chair.

This meeting was held on the sixty-second anniversary of the incorporation of the Institution by Royal Charter. At that time the number of members was 156, and the gross annual receipts were 447*l*. At the close of the past financial year the number of members was 5,872, and the gross receipts for the twelve months amounted to 22,478*l*. This increase—thirty-seven-fold in numbers and fifty-fold in revenue—sufficiently indicated the position which the Institution had taken in connexion with the profession it was designed to promote. It should always be borne in mind that a large rate of increase was by no means desirable. There was no object, however, in limiting the numbers, as was the custom in some exclusive bodies, for the Institution had always opened—and it was hoped always would open—its doors to all engineers who had an honest title to be entered on its register; but it refrained from augmenting its numbers by the admission of persons who were merely attracted to it for their own advantage. Above all things, the Council desired it to be understood that membership in the Institution should be a real guarantee of the professional standing and (as far as possible) also of the personal character, of those on whom it was conferred. For these reasons the Council repeated the recommendation, often previously made, that every member should take care not to attach his signature to any proposition-paper, unless fully satisfied as to the truth of the representations it contained, and as to the general eligibility of the candidate.

During the past year, there were elected 3 Honorary Members (Sir Henry Bessemer, F.R.S., Sir William Thomson, LL.D., F.R.S., and General Edward Frome, R.E.), 32 Members, 263 Associate-Members, and 3 Associates, while the name of 1 Member was restored to the list. On the other hand, 138 names had been removed from the register, 87 of which were losses by death. Among the latter, the Council recorded with regret the names of three Honorary Members, the King of Portugal, Dr. John Percy, F.R.S., and General Edward Frome, R.E., who died shortly after his election. The roll of the Institution therefore showed a net increase of 164, the number of members of all classes (irrespective of students) being now 4,903. This represented an increase at the rate of about 3½ per cent. per annum. Owing to more stringent regulations as to the admission of Students, there had been a decrease of 20 in the number of that class. The admissions had included 156 Students, and 1 was restored to the list, whilst 73 had been elected Associate-Members and 104 had passed out of the list.

At the ordinary meetings, papers on important constructive engineering works had been read, and also on many branches of mechanical and electrical engineering. It was hoped that some branch of metallurgy might have been brought forward, but in that hope the Council had been disappointed. It was, however, confidently believed that the omission would be made good next session. For two of the papers the Institution was indebted to Mr. Lyster, Member of Council, and to Sir Frederick Bramwell, Bart., D.C.L., F.R.S., Past-President. In conformity with long-established usage, these communications were not taken into consideration in the adjudication of the premiums. Telford Medals and Telford Premiums had been awarded to Messrs. John Robinson, C. O. Burge, and F. T. G. Walton; Telford Premiums to Messrs. S. W. Barnaby, W. H. Wheeler, James Price, jun., C. Hopkinson, H. G. Sheppard, and W. Airy; and the Manby Premium to Messrs. W. P. James Fawcus and E. W. Cowan. For papers read at the supplemental meetings of students, a Miller Scholarship had been awarded to Mr. C. Frewen Jenkin, and Miller Prizes to Messrs. C. H. Wordingham, A. E. Young, L. A. Legros, F. P. Reynolds, J. Hale, and G. H. Sheffield.

Since the last annual meeting four volumes of "Minutes of Proceedings" had been issued.

The Council trusted that the members would continue to contribute to this part of the work of the Institution, as being that which was of the greatest permanent importance. It was intended shortly to issue a pamphlet of about sixty pages, enumerating those public educational establishments in the British dominions which included special preparation for the engineering profession. The abstract of receipts and expenditure showed, on the credit side, income, 17,677*l.* 13s. 10d.; capital (that was admission-fees and life-compositions), 3,794*l.* 14s.; trust-fund receipts, 1,005*l.* 6s. 9d. (including the Crampton Bequest of 500 and the Trevithick Memorial Donation, 100*l.* 0s. 9d.), making a total of 22,477*l.* 14s. 7d. On the other side of the account, the general expenditure had been 14,696*l.* 6s. 3d., the investments on account of capital, 6,090*l.* 19s., and payments or investments of trust funds, 1,049*l.* 2s. 4d. At present the Institution investments in Consols, Metropolitan Board of Works Stock, and Railway Debenture Stocks aggregated 43,560*l.*; the freeholds of the three contiguous houses in Great George-street, 40,000*l.*; the Whitworth legacy, 5,400*l.*; and Trust Funds, 15,286*l.* 0s. 10d., making a total of 104,186*l.* 0s. 10d.

In conclusion, the report referred to the visit, last summer, to Europe, of a representative body of members of the American Societies of Civil, Mining, Mechanical and Electrical Engineers, which their Institution had the honour of entertaining for six days. Many and various were the means which the reception committee took to arrange for the amusement and recreation of the visitors. On the whole the visit might be considered to have been a great success, and was one full of pleasant memories for the hosts.

The adoption of the report was moved, seconded, and carried, and it was ordered to be printed in the "Minutes of Proceedings." Cordial votes of thanks were then passed to the President, to the Vice-Presidents and other Members of the Council, to the Auditors, to the Secretaries and Staff, and to the Scrutineers.

The ballot for Council resulted in the election of Sir John Coode, K.C.M.G., as President; of Mr. G. Berkley, Mr. H. Hayter, Mr. A. Giles, M.P., and Sir Robert Rawlinson, K.C.B., as Vice-Presidents; and of Mr. W. Anderson, D.C.L., Sir Benjamin Baker, K.C.M.G., Mr. J. Wolfe Barry, Mr. E. A. Cowper, Sir Jas. N. Douglass, Sir Douglas Fox, Mr. J. Clarke Hawkshaw, M.A., Mr. C. Hawksley, Sir Bradford Leslie, K.C.I.E., Mr. G. Fosbery Lyster, Mr. J. Mansergh, Mr. W. H. Preece, F.R.S., Sir E. J. Reed, K.C.B., F.R.S., M.P., Mr. W. Shelford, and Mr. F. W. Webb as other members of the Council.

The Session was then adjourned until the second Tuesday in November, at 8 p.m.

The following is a detailed list of the awards made for communications submitted during the past session:—

For Papers Read and Discussed at the Ordinary Meetings.

1. A Telford Medal and a Telford Premium to John Robinson, M.Inst.C.E., for his Paper on "The Barry Dock Works, including the Hydraulic Machinery and the Mode of Tipping Coal."
2. A Telford Medal and a Telford Premium to Charles Ormsby Burge, M.Inst.C.E., for his account of "The Hawkesbury Bridge, New South Wales."
3. A Telford Medal and a Telford Premium to Frederick Thomas Granville Walton, C.I.E., M.Inst.C.E., for his description of "The Construction of the Dufferin Bridge over the Ganges, at Benares."
4. A Telford Premium to Sydney Walker Barnaby,* M.Inst.C.E., for his Paper on "The Screw-Propeller."
5. A Telford Premium to William Henry Wheeler,† M.Inst.C.E., for his Paper on "Bars at the Mouths of Tidal Estuaries."
6. A Telford Premium to James Price, jun., B.E., M.Inst.C.E., for his account of "Lough Erne Drainage Works."
7. The Manby Premium to William Paul James Fawcus, and to Edward Woodrowe Cowan, Assoc.MM.-Inst.C.E., for their joint Paper descriptive of "The Keswick Water-Power Electric-Light Station."

For Papers Printed in the Proceedings without being Discussed.

1. A Telford Premium to Charles Hopkinson, B.Sc., M.Inst.C.E., for his Paper on "Hydraulic Packing-presses."
2. A Telford Premium to Herbert Gurney Sheppard, Assoc.M.Inst.C.E., for his Paper on "The Reclamation of Lake Aboukir, near Alexandria, Egypt."
3. A Telford Premium to Wilfrid Airy, B.A.,‡ M.Inst.C.E., for his Papers, "On the Action of Quicksands," and on "The Probable Errors of Surveying by Vertical Angles."

* Has previously received a Watt Medal and a Telford Premium.

† Has previously received Telford Premiums.

‡ Has already received Telford and Manby Premiums.

For Papers Read at the Supplemental Meetings of Students.

1. The Miller Scholarship to Charles Frewen Jenkin, B.A., Stud.Inst.C.E., for his Paper on "Some Applications of Electricity in Engineering Workshops."
2. A Miller Prize to Charles Henry Wordingham, A.K.C., Stud.Inst.C.E., for his Paper on "Telephonic Switching."
3. A Miller Prize to Alfred Ernest Young, Stud.-Inst.C.E., for his account of "The Deflection of Spiral Springs."
4. A Miller Prize to Lucien Alphonse Legros, Stud.-Inst.C.E., for his Paper on "Economy Trials of a Compound Mill-engine and Lancashire Boilers."
5. A Miller Prize to Frank Paul Reynolds, A.K.C., Stud.Inst.C.E., for his description of the "Roof over the Carlisle Markets."
6. A Miller Prize to John Hale, Stud.Inst.C.E., for his description of the "Hydraulic Station and Machinery of the North London Railway at Poplar."
7. A Miller Prize to George Harrison Sheffield, Stud.Inst.C.E., for his Paper on the "Principles of Iron Foundry Practice."

It has been determined to print the first three Students' Papers, either in whole or in part, in the Minutes of Proceedings.

LONDON AND MIDDLESEX ARCHÆOLOGICAL SOCIETY.

A MEETING of this Society was held on the 3rd inst. at Brewers' Hall,* previously to which the members and friends assembled in the Bank of England to view the site of the church and churchyard of St. Christopher-le-Stocks in the courtyard of the Bank, which is now a very pretty garden, with a large fountain in the centre. Dr. Freshfield, the President of the Society, met the members, and pointed out the site of the church which was taken down when the Bank was enlarged in 1781. Part of this church escaped the Great Fire, and that part which was rebuilt was of the Tuscan order. Dr. Freshfield then described the course of the Wall Brook, which flowed past this church towards St. Margaret's Church, Lothbury, which latter church the members afterwards entered. Here again the course of the old Wall Brook was pointed out as running under the chancel window and past the altar. Having inspected the font and carved woodwork in the church, said to be by Gibbons, the President led the party up Tokenhouse-yard, still pointing out the course of the Wall Brook in a northerly direction as far as London-wall. The members then proceeded to Brewers' Hall, in Addle-street, Aldermanbury. Dr. Freshfield here presided, and introduced Mr. Charles Welch, F.S.A., one of the hon. secretaries of the society, who read a paper on "The Early History of the Brewers' Company as told by their own Records." The Brewers' Company is the fourteenth on the list of the City companies. It was incorporated in the sixteenth year of Henry VI., which was afterwards confirmed in the nineteenth of Edward IV. The charters and the old minute-books and books of accounts of those periods were exhibited to the meeting, and afterwards inspected.

Mr. E. W. Brabrook, F.S.A., who had written a paper on "Some Eminent Members of the Company," was unfortunately unable to be present, so, at the request of the President, the paper was read by Mr. John E. Price, F.S.A., and after inspecting the hall and other rooms the members dispersed.

* For a descriptive account of the Brewers' Hall, *vide Builder* of July 6, 1889, p. 10.

SURVEYORSHIPS.

Cheltenham.—The *Western Morning News* reports that on the 6th inst., Mr. Joseph Hall, Surveyor to the Torquay Local Board, was appointed Borough Surveyor to the Cheltenham Town Council, at a salary of £550 a year. Mr. Hall, who was elected by a majority of seventeen to six over the local candidate, was unanimously recommended to the Council for the appointment, as the result of a visit to Torquay a few days since of the Mayor of Cheltenham and four other members of the Corporation, and their inspection of the roads and pleasure-grounds. Mr. Hall, who was formerly chief assistant to the Borough Surveyor of Leeds, has been Surveyor to the Torquay Local Board nearly nine years, succeeding Mr. John Little, one of the present County Surveyors.

Bournemouth.—At a meeting of the Bournemouth Improvement Commissioners, held on the 3rd inst., it was unanimously resolved to increase the salary of Mr. F. W. Lacey, the Surveyor, to 500*l.* a year, to commence from the half-quarter. Mr. Lacey has held this appointment since March of last year.

NEW BATHS FOR ST. GEORGE'S, HANOVER-SQUARE.

THE new public baths, &c., which have been erected by the Commissioners of Public Baths and Washhouses for the parish of St. George, Hanover-square, situate in Buckingham Palace-road, were recently opened by the Duke of Westminster.

In an address presented to the Duke on the occasion, it was stated that the new baths and washhouses have been erected for the benefit of the residents of the southern part of the parish. The buildings were commenced in August, 1888, the necessary outlay having been approved by the Vestry of the parish. In open competition, the design selected was that of Mr. Francis James Smith, architect, of Winchester House, Old Broad-street. Tenders for the construction of the buildings were invited by public advertisement, and the lowest tender was that of Messrs. J. Mowlem & Co., for a sum of 28,209*l.*, which was accepted. But we understand that the total outlay will considerably exceed this sum. The building has been erected in a thoroughly substantial manner, and advantage has been taken of every modern improvement and appliance suitable to this class of work.

The accommodation provided is as follows, viz.:—First-class swimming bath, 90 ft. by 30 ft.; second ditto, 57 ft. by 33 ft. First-class private baths (men), twenty-three in number; first-class ditto (women), ten in number; second-class ditto (men), twenty-nine in number; second-class ditto (women), fourteen in number. Laundry accommodation for forty-four washers. Private laundry for use of the establishment. In connexion with these several departments provision has been made for the requisite offices necessary for their successful working. The fittings and machinery, which include mangels, hydro-extractors, drying-horses, steam and hot-water washing machines, washing troughs, with a "Vowel" washing machine, are worked by steam-power. A lift, by which access is gained to the laundry, is worked by hydraulic power.

An ample supply of surplus water is secured by the provision of a large tank erected over a portion of the back building, which has a storage capacity of 60,000 gallons. In the basement are placed four 30-horse-power boilers for generating steam for the machinery, and providing hot water for the baths and laundry. There are two engines, one of which drives the laundry machinery, and the other works the "Siemens" dynamo which generates the electric current for lighting the buildings throughout. These engines are both of special type. The electric lighting system adopted is that of the storage battery, with sufficient power for a supply of twelve hours' duration.

Special attention has been paid to ensure the rapid filling and emptying of the swimming baths, with the result that the large bath can be filled in eighty minutes and emptied in twenty-five minutes, and the smaller one can be filled in forty-five minutes and emptied in fifteen minutes. They are heated by means of steam injectors, which is asserted to be the best and most economical method of heating large quantities of water.

The foregoing is a brief description of these buildings. The engineering portion of the work has been ably executed under the contractors by Messrs. H. Young & Co., of Pimlico. The electric light installation, the lift, and general furnishing of the buildings were not included in the original contract. The front of the elevation towards the Buckingham Palace-road is of red brick and Corsehill stone. The entrance to the laundry and second-class baths is on the north side.

NEW PREMISES, HOLLOWAY:

THE "ARKTOS" REFRIGERATOR.

THE large block of buildings for Mr. W. Beale, which was in course of erection for about twelve months, has lately been opened for business. The block combines restaurant, baker's and confectioner's shop, jeweller's shop, provision, poultry, and fish store, machine bakery, and electric-lighting station. Situate at the junction of Holloway-road with Tollington-road, and being directly opposite Camden and Caledonian roads, the site is a prominent one. The building is six stories high, including the central raised portion, which forms a caretaker's residence, and

is surmounted by a small turret and dormer windows.

The elevation is of red brick, with stone dressings and Gothic traceried panels, moulded string-courses, mosaic floral panels, and Gothic window-heads surmounted by crocketted finials in relief. The upper portion has a large frieze in mosaic work, originally intended, we believe, for figures, but that idea has been abandoned, and the panel is mainly occupied with the letters forming the name of the proprietor. Provision was made by the architect in the elevation just above the first-floor window-head at the angle of the building for a stone statue on a pedestal at the corner of the building, standing underneath a stone canopy. This has been abandoned in favour of a time-ball, worked by electric current direct from Greenwich, and rising and dropping at a given hour of the day.

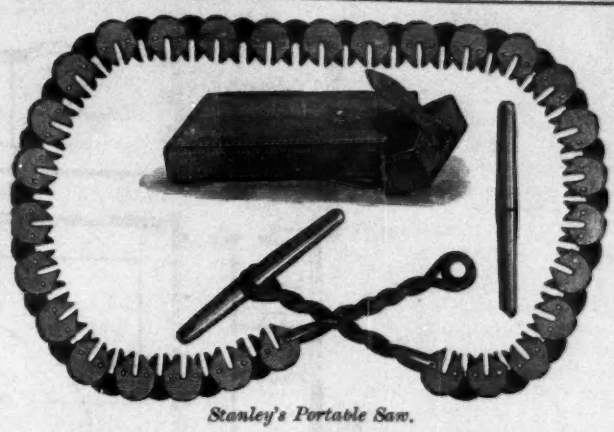
There are some good examples of joinery work in the shop, restaurant, and café. The front is of polished teak framing, glazed with bevelled plate and geometrical leaded lights, the counters and cases having twisted standards and satinwood panels. The café screen is in keeping, and is glazed with ornamental glass in device, with octagonal semi-columns with fret-work frieze panels, and carved terminals. This has been executed by Messrs. F. Sage & Co.

There are five public entrances to the premises, one leading to the front shop, at the side of which there is a bold entrance, with stone staircase leading to billiard-room, dining-room, and banqueting-hall. There is a distinct entrance to the electrical station, others to the baker's and provision shops, and a stone staircase leading to the counting-house.

The entire premises cover an area of 8,510 square feet, including a jeweller's shop at the corner, occupied by Messrs. Jones & Son.

The ground-floor and basement contain the electrical engineering station for supplying current not only to these premises but to the neighbouring shops, and for lighting the adjacent portions of the public thoroughfares. The entire electrical plant will comprise four tubular boilers of 52 horse-power each, two high-speed steam engines of 80 horse-power each, and two similar engines of 40 horse-power each, making a total of 240-horse engine power. The smaller engines have been running for some time, each operating two 350-light dynamos, running at 450 revolutions per minute, and one large one operating a 700-light dynamo running at 425 revolutions. The rest of the plant is in course of erection, and is needed for the requirements of the new shops being built between Tollington-road and the "Nag's Head." A concession has been granted by the Vestry to lay mains to this section, and five customers are already being supplied with electric light and power. Above the engine-room is a machine bakery, equipped with two of Perkins's patent steam ovens, and all kinds of modern machinery for the trade. This, together with the lifts, hoists, and cranes, are all driven by electricity, Messrs. Sharp & Kent being the contractors.

In the basement is to be seen in use one of Messrs. Perkins & Sons' patent refrigerating rooms, called "The Arktos," for storing or freezing all kinds of perishable edibles. This being a new development of applied science, a few notes on its construction will not be out of place. In size it is about 10 ft. cube. The walls, 2 ft. thick, are composed of a double metal lining, filled in with insulating material. The refrigerating process is effected from the outside by means of two horizontal pipes, connected with each other, charged with liquid ammonia, which are also attached to and form part of the liquefier and refrigerator inside the cold room. The application of heat (by a small gas jet, or a fire as here employed) to the horizontal tubes containing the liquid ammonia separates the ammonia from the liquid, and causes it to pass through the condenser into the refrigerator in its original gaseous form. The density of the gas in the tubes absorbs the heat of the chamber, reducing it to any required degree, even as low as 30 below zero. On the occasion of our visit it registered 18 degrees below zero. When reaching a certain temperature the heat is removed, and the gas returns to the combiner and is again united with the liquid. This is generally done when the thermometer reaches 270 deg. Fahr. In most cases it is only necessary to apply heat every alternate day, but in this instance the fire is usually lighted for a few hours in the morning and again in the afternoon. The process is automatic, and the system of pipes is hermetically sealed. On entering the cold room we find a dry, cold, healthy atmosphere, the pipes being covered with hoar, absolutely undistinguishable from a natural hoar-frost. Mr. Beale regards the refrigerator as a valuable adjunct to his business in giving him complete control over his perishable comestibles. As this is one of the first installations in use it is satisfactory to learn that the system is completely successful. The water required for the condenser is procured from a well on the premises. A lift-pump for this purpose is driven by an electric motor.



Stanley's Portable Saw.

The first and upper floors of the building contain dining, billiard, and smoke-rooms, pastry bakehouse, kitchen, larders, &c. A banquetting-hall, about 40 ft. by 30 ft., and 24 ft. high, is approached from the first-floor landing. The walls are lined with an oak-framed dado, with pitch-pine panels, with doors and pediments to match. A gallery of oak and pitch-pine extends the width of the hall, and is entered from the second-floor corridor.

The premises are warmed throughout with Messrs. Perkins's patent steam-pipes, supplied by the patentees and manufacturers of the "Arktos." The electric lighting of this room is a special feature, including large incandescent ceiling-lamps and wall-brackets equalling 2,000 candle-power, besides several movable electric table-lamps. Messrs. Sharp & Kent, of 34, Victoria-street, Westminster, have carried out the complete installation, and supplied the entire electrical plant, boilers, engines, and fittings. The building and the floors are fireproof. This and other ironwork has, we understand, been supplied by Messrs. Homan & Rodgers. Messrs. Rust & Co. are responsible for the vitreous mosaic work, and Messrs. Cliff & Sons for the faïence pilasters.

Mr. Frederick Wallen is the architect, and Messrs. Oldrey & Co., of Westbourne Park, the builders.

The entire cost exceeds 30,000*l.*

STANLEY'S PORTABLE SAW.

THIS saw, of which an illustration is subjoined, is made of hardened steel plates rivetted together in double series; the rivets are sufficiently loose to form joints; each plate is shaped on one side to form a pair of saw-teeth cutting in opposite directions A cross handle at each end of the saw fits into a ring for use; these handles are withdrawn from their rings for packing; for inaccessible trees, &c., ropes may be attached to the rings in place of the cross handles. It can be used by one man; weighs complete only 2¼ lb., including case, which measures over all 1¾ in. by 4 in., by 8 in. It is manufactured by Mr. H. T. Tallack.

THE LONDON COUNTY COUNCIL.

The usual weekly meeting of the London County Council was held on Tuesday last at the offices in Spring-gardens, Sir J. Lubbock, Vice-Chairman, presiding, in the absence of the Chairman, Lord Rosebery.

Management of Parks and Open Spaces.—The consideration of the following paragraph of the adjourned report of the Parks and Open Spaces Committee was proceeded with:—

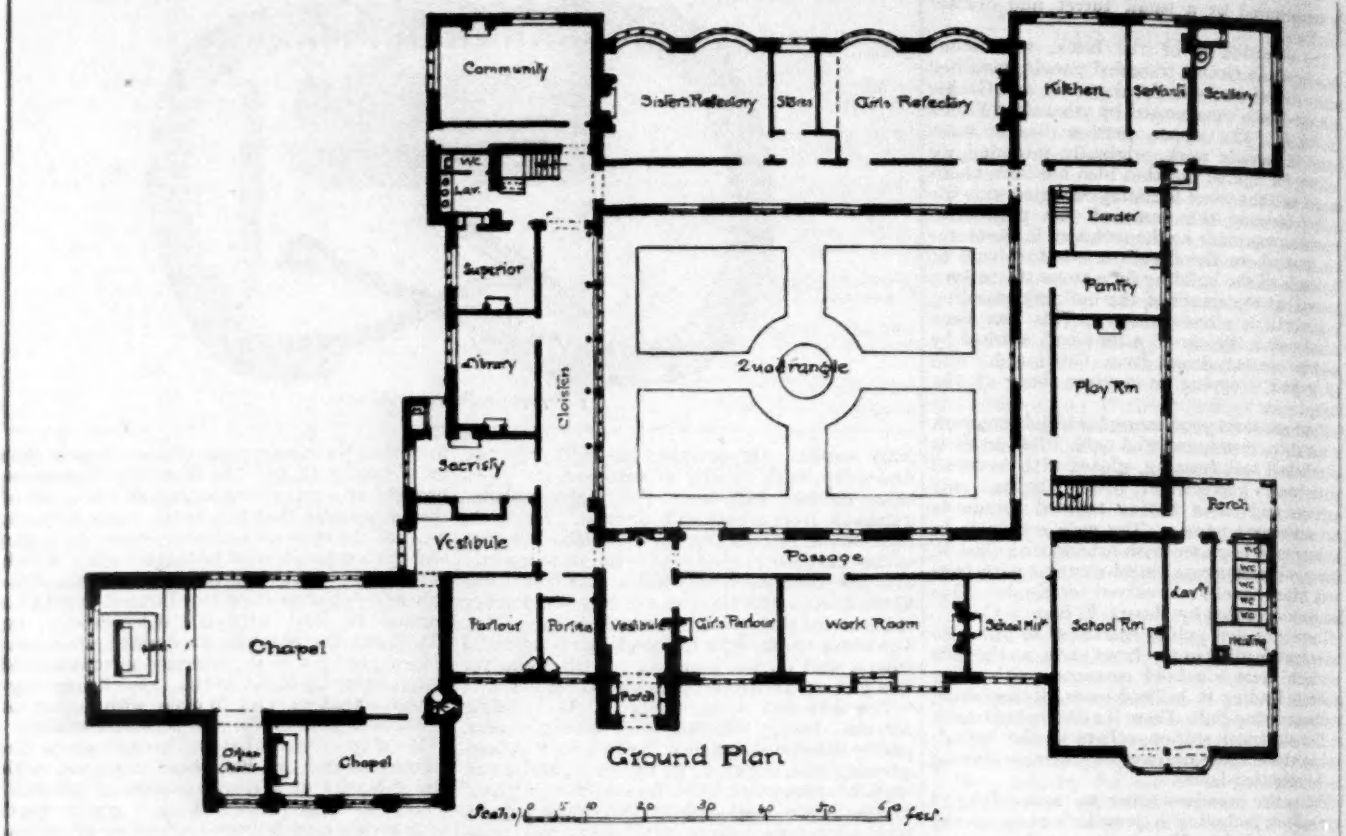
"We have to submit for the consideration of the Council an important proposal with respect to the future management of the parks and open spaces, and the organisation of the staff employed in connexion therewith. We have previously been in communication with the Standing Committee on this subject, and it will be within the recollection of the Council that on February 11 last the Standing Committee brought up a report suggesting, as the result of the conferences that had taken place between us, that the business connected with the parks and open spaces should no longer form a branch of the Architect's department, but that a separate sub-department of the Council should be formed to deal with it. Subsequently, on March 26, the Standing Committee, after considering our proposals, informed us that we had better bring up direct to the Council any suggestions that we had to make with respect to the constitution of the new sub-department.

We may preface what we have to say by the statement that we have been impressed with the necessity of a reorganisation of the staff employed upon parks and open spaces work, with a view especially to uniformity of system and unity of direction and control. During the last twenty years the area of the parks and open spaces of London under municipal control has increased from 178 acres to more than 3,000 acres, and the number of persons employed is nearly 400. The annual expenditure is now nearly 50,000*l.* for maintenance only, whilst the combined expenditure on capital and working accounts amounts to no less than 100,000*l.*, a sum which does not promise to diminish.

These figures are sufficient to indicate the necessity of a thoroughly good organisation, and, as we believe, of efficient control under a single responsible head. We are, therefore, of opinion that there should be a separate Parks and Open Spaces Sub-Department, and for the sake of clearness we may explain that in using the word Sub-Department we do not mean that the sub-department should be either an adjunct or subordinate to any other department. What we wish to convey is that the new organisation and its head should not claim to be equal in point of official position and salary with the other departments of the Council's service.

The question of the kind of man to be placed at the head of the new sub-department is one of great importance, to which we have accordingly given much attention, and the conclusion we have come to is that he should be a professional landscape gardener of a high class, having a thorough technical knowledge of everything connected with the formation and maintenance of parks and gardens, together with such general business capacity and experience in the management of men as would enable him to direct the large staff of men that would be placed under his control. We are of opinion that the Council could obtain a person possessed of these qualifications for a salary of 600*l.* a year, but hardly for less, and that is the salary which we should accordingly recommend the Council to pay.

We deem it essential that the new head should have complete control of all the persons, of whatever class, employed exclusively in connexion with the parks and open spaces, subject of course to the limitation that the Clerk of the Council should continue to be responsible for recording the proceedings of the Parks Committee as of all other committees, and for the control of the official correspondence; and it would be the duty of the head of the parks sub-department to give the Clerk all the information and assistance he may require for this purpose. Hitherto, whilst the Architect has had the superintendence of all the men employed in the parks, whether keepers or labourers, and also of the labourers on the open spaces, the common-keepers have been under the control of the Clerk of the Council. He has directed



Industrial Schools, Knowle, Bristol.—Ground Plan.

them through his assistant, Mr. C. W. Nairn, who has acted for many years as clerk to the Parks Committee, and has also been superintendent of common-keepers. This division of responsibility we propose to do away with, so that the whole staff may be under one control.

To give effect to the views above expressed, we submit the following recommendations:—

'(*a*) That a separate Parks and Open Spaces Sub-department be formed, consisting of all persons employed exclusively in connexion with the parks and open spaces, subject to the reservation of such work as properly devolves on the Clerk of the Council.

(*b*) That the head of the new sub-department be a professional landscape gardener of a high-class, thoroughly versed in the management of parks, gardens, and open spaces, and possessed of business capacity, and experience in the control and direction of men

(*c*) That the head of the new sub-department be designated "Superintendent of Parks and Open Spaces," and that his salary be 600*l.* a year.

(*d*) That such superintendent do supervise and be responsible for the whole of the sub-department, and do control all the officers and servants employed therein.

(*e*) That in consideration of Mr. Nairn, of the Clerk's department, being deprived of his position as superintendent of common-keepers, and of the allowance of 53*l.* a year which he has received (in addition to his salary of 300*l.*) by way of payment for extra work and travelling expenses in connexion with that position, his salary as an assistant in the Clerk's department be in future 350*l.* a year.'"

The presentation of this report gave rise to a long discussion, and an amendment was moved to postpone the consideration of the matter for a year. This was lost, as was a subsequent amendment to postpone the matter for six months. The report was then substantially agreed to, the questions of the salaries proposed being referred to the Standing Committee for consideration.

The Property of the Livery Companies.—The Corporate Property Committee reported that they had last month drawn attention to the subject of the Livery Companies of London, and, in view of steps which they had reason to apprehend were in contemplation by some of the Companies as to the alienation or division of their property or part of it, they made a recommendation that the Council should address a further communication to the Government, drawing attention to the desirability of some action being taken in the direction indicated by the report of the Royal Commissioners on this subject in 1884, one of the recommendations of the Commissioners being that the Companies should be placed under restrictions to prevent the alienation of their ancient corporate property, and the other recommendations having reference to its better application for the future. The matter was referred back to them by the Council, since which their attention had been drawn to a Bill now before Parliament, and awaiting second reading in the Commons, entitled the Corporate Associations (Property) Bill, by which it was proposed to restrain certain corporate associations established for other than trade purposes (and including apparently the City livery companies), or rather the individual members thereof, from terminating the existence of such associations by arrangement and dividing the property among themselves. The objects of this Bill were less extensive than those recommended by the Royal Commissioners, but as an intermediate or preliminary step towards effecting the recommendations of the Commissioners, the Bill appeared to the Committee such as the Council should support. They therefore recommended "That the Council do petition Parliament in favour of the Corporate Associations (Property) Bill, and that it be referred to the Parliamentary Committee to prepare such petition."

The consideration of the report was deferred.

Proposed Iron Chimney-shaft.—The Building Act Committee, in their report, recommended "That the application of Messrs. Maudslay, Sons, & Field, Limited, for approval of the construction of a wrought-iron chimney-shaft at the Engine Works, Blackwall-lane, Greenwich, be not granted, as the Committee are of opinion that the construction of iron furnace chimney-shafts is objectionable." Some opposition arose to this proposal, but it was explained by Councillor Hutton, the Chairman of the Committee, and by Councillors Roberts and Marsland, that in view of the public safety the Committee had no option but to refuse permission for the erection of iron factory chimneys, which were likely to become dangerous after twenty years or less. Eventually the Committee's recommendation was agreed to by a large majority, and

After transacting other business the Council adjourned.

Alton Parish Church.—A new clock, by J. W. Benson, has just been made and fixed for the parish church at Alton, Hants. It is made with all the latest improvements, and shows the time upon a copper dial 8 ft. in diameter. The clock chimes the St. Mary's, Cambridge, quarters, upon the second, third, fourth, and seventh bells of a peal of eight, and the hours upon the tenor, which weighs 20 cwt.

Illustrations.

INDUSTRIAL SCHOOLS, KNOWLE, BRISTOL.

THE illustration shows the main front of the new buildings for the House of Charity, St. Raphael's, Bristol. The scheme provides accommodation for children the inmates of the Home, and a community of eighteen sisters. A large chapel is to be built at the south-east corner of the quadrangle, and a detached laundry forms part of the design. The whole is to be built of local stone quarried on the site, with Doulting stone dressings, and overhanging upper stories of half timber-work or rough-cast. The roofs will be tiled. The building is to be commenced immediately, and the estimated cost, exclusive of the chapels, is 10,000*l.* The architect is Mr. John D. Sedding.

The drawing is hung in the Architectural Room at the Royal Academy Exhibition.

BRITISH AND FOREIGN MARINE INSURANCE COMPANY'S OFFICES, LIVERPOOL.

THE building illustrated has been erected in Castle-street, Liverpool, for the British and Foreign Marine Insurance Co.

The lower portion is faced with polished red granite, and the upper portion with Dumfries red stone, and Ruabon terra-cotta.

A special feature in the building is the frieze under the first-floor windows, the subjects in which have been executed in glass mosaic by Messrs. Salviati, from cartoons by Mr. Frank Murray. They represent ancient and modern shipping, in bright colour on a gold ground.

The whole of the work has been carried out by Messrs. Jones & Sons from the designs of Messrs. Grayson & Ould, architects, of Liverpool.

The drawing from which the illustration is taken is hung in the Architectural Room at the Royal Academy.

SALISBURY CHANTRY, CHRISTCHURCH, HANTS.

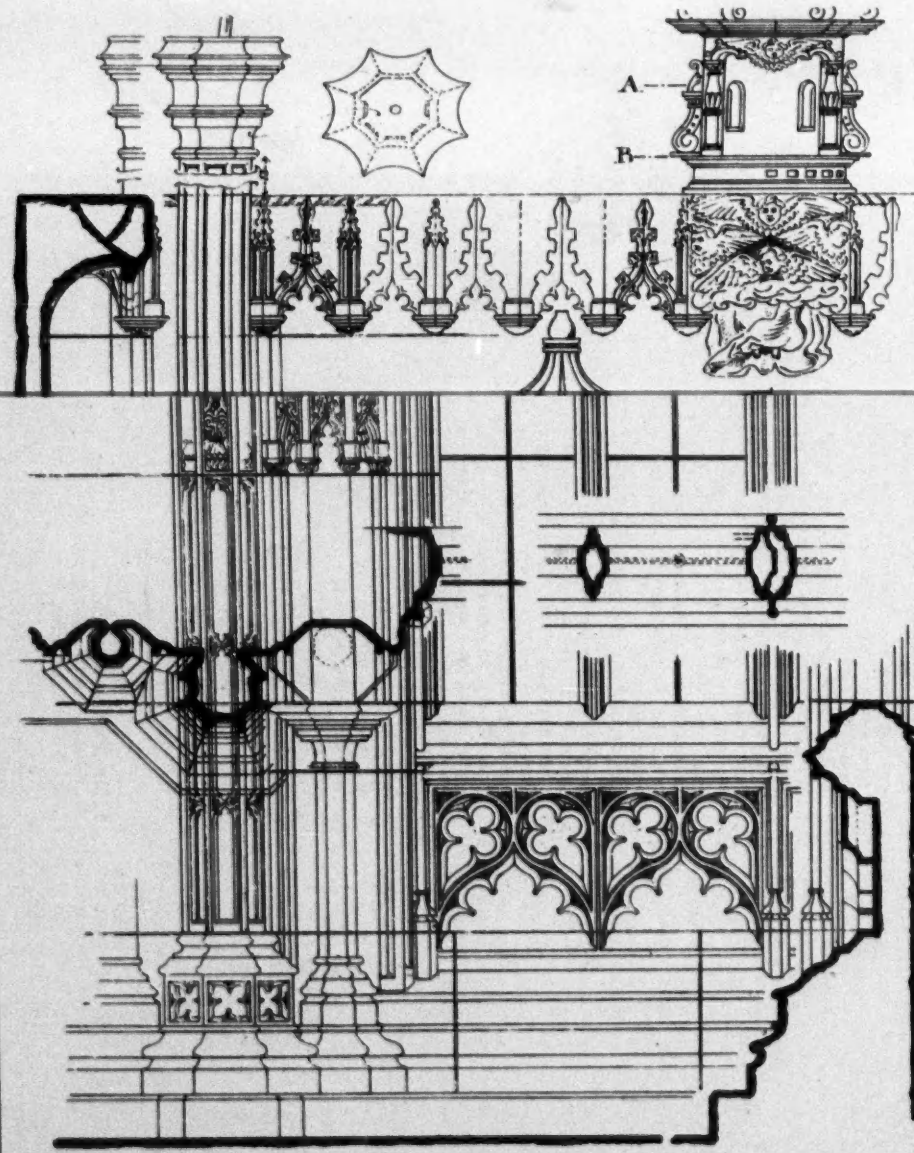
THIS interesting little chantry, built by the Countess of Salisbury, and intended for her own burial-place, shows a curious mixture of Gothic and Renaissance. The work is ascribed to Torregiano, and has never been restored, but was cleaned down in 1813.

We are indebted to the successive white-washings of preceding centuries for the mas

"Salisbury" Chantry, Christchurch, Hants.

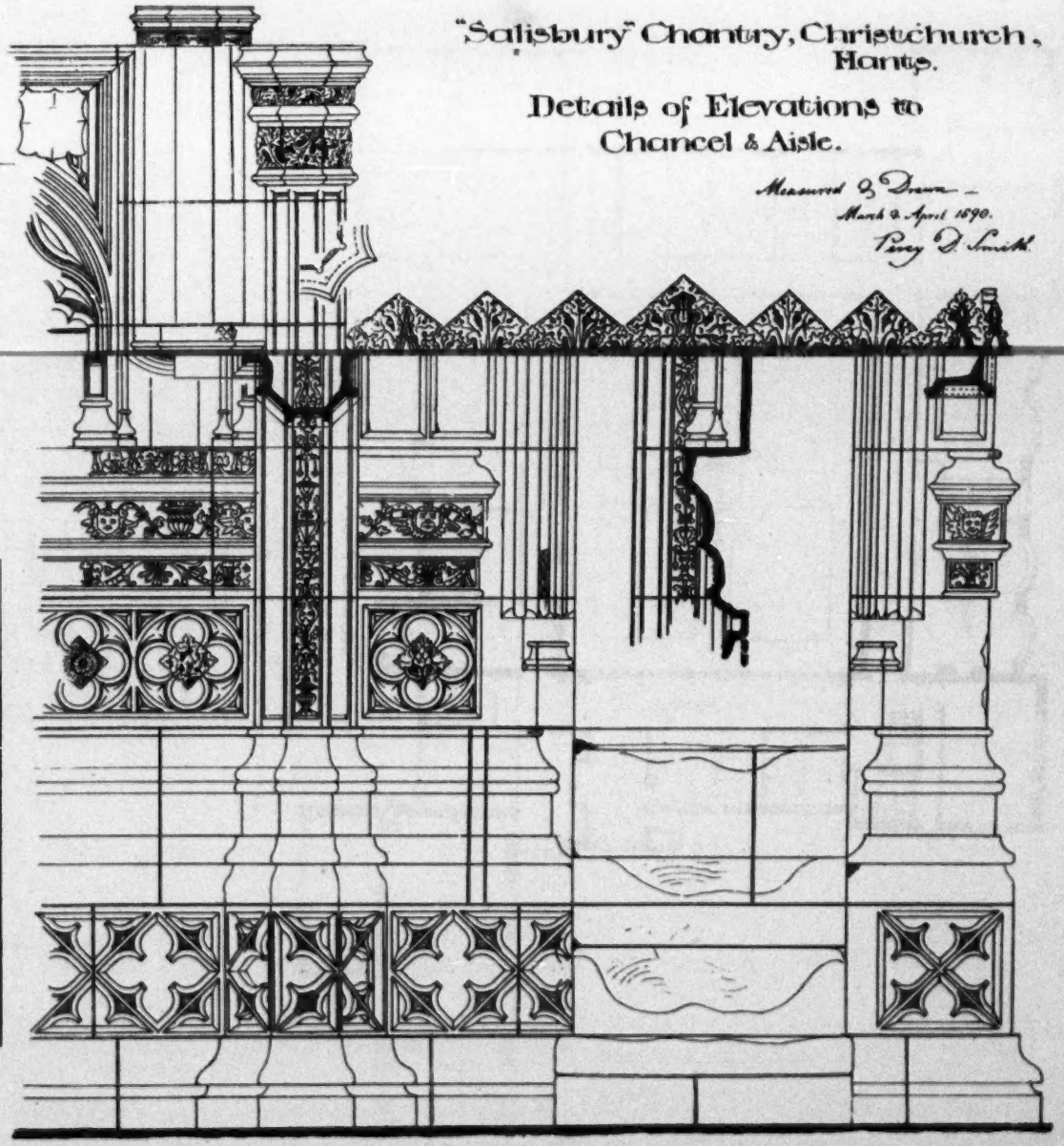
Details of Elevations to Chancel & Aisle.

Measured & Drawn
March & April 1890.
Percy D. Smith.



Chancel Elevation.

Scale of Feet. 0 1 2 3



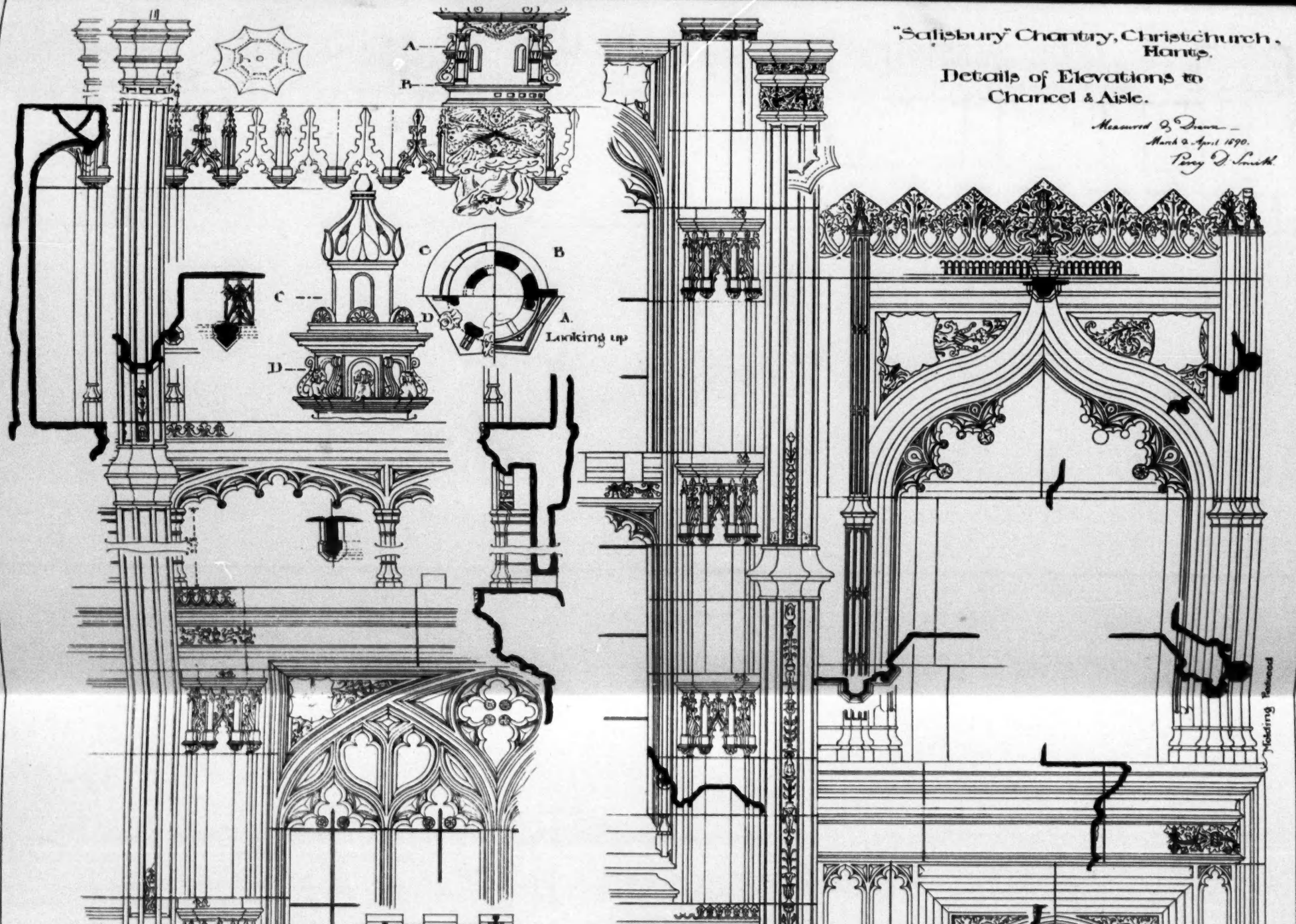
Section.

PHOTO-LITHO. SPRAGUE & CO., 82, MARTINS LANE, CANNON ST., LONDON, E.C.

SALISBURY CHANTRY, CHRISTCHURCH, HANTS.

MEASURED AND DRAWN BY Mr. PERCY D. SMITH.

A. A. Travelling Studentship, 1890.


"Salisbury" Chantry, Christchurch, Hants.
Details of Elevations to Chancel & Aisle.
Measured & Drawn
March & April 1890.
Percy J. Smith
A
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C
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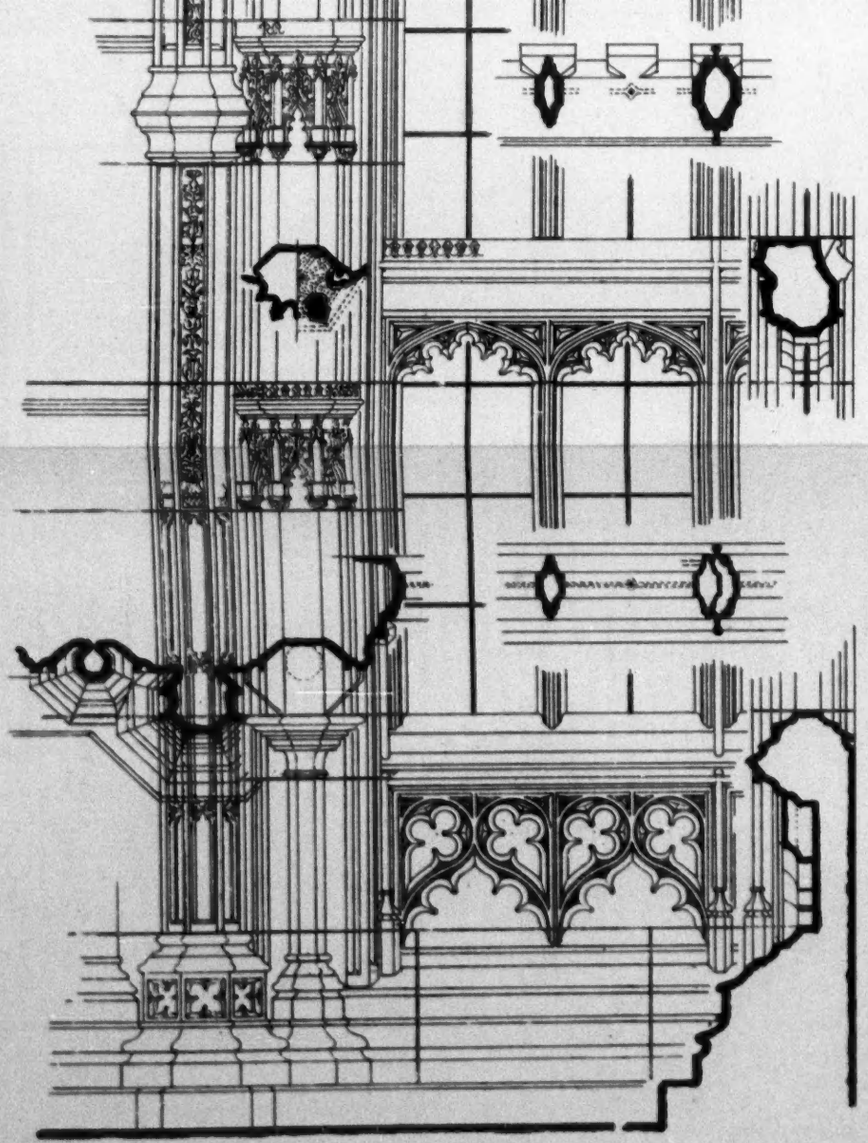
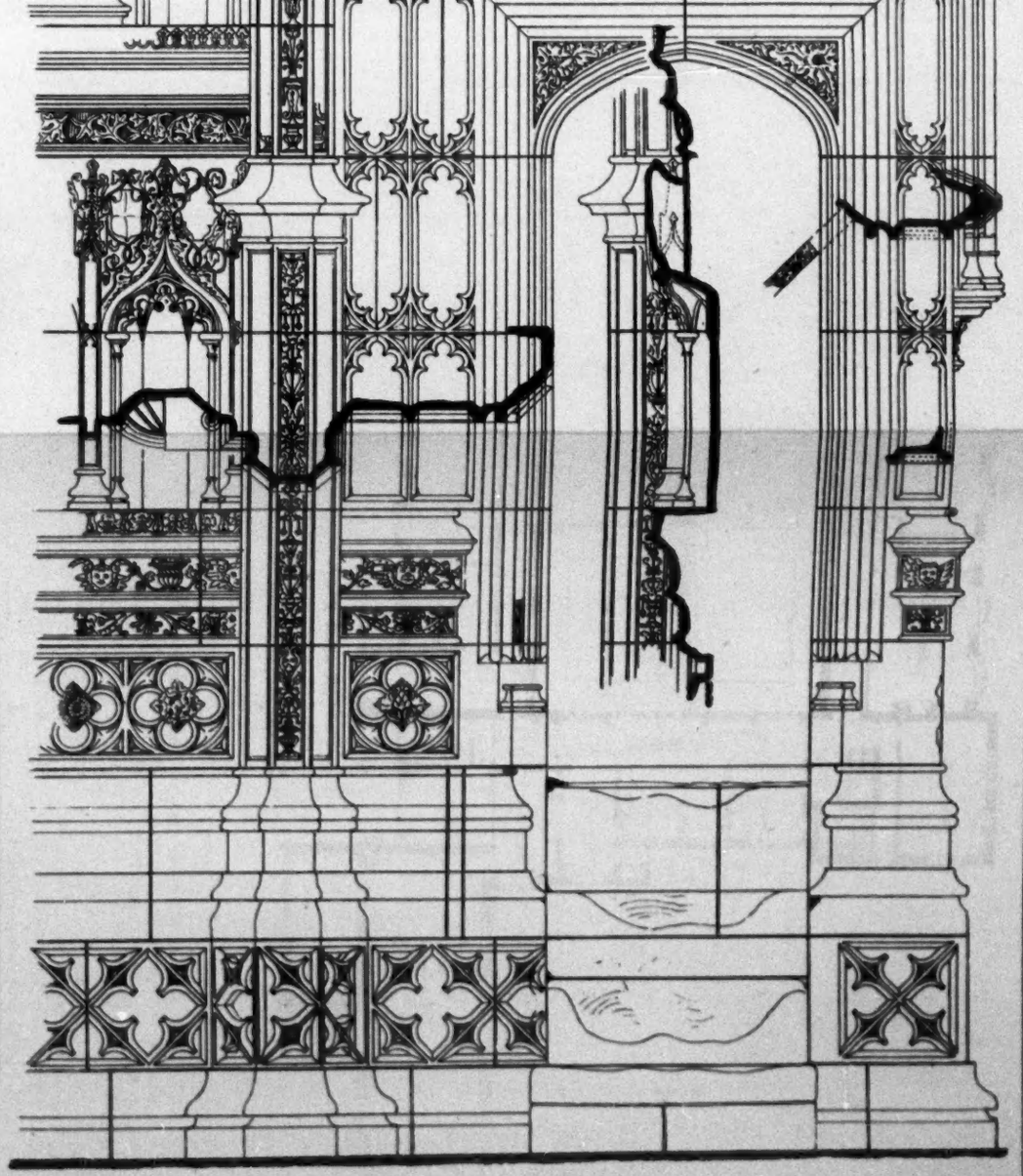
A.
Looking up
Moulding Retained



Chancel Elevation.



Section.

Scale of Feet 0 1 2 3

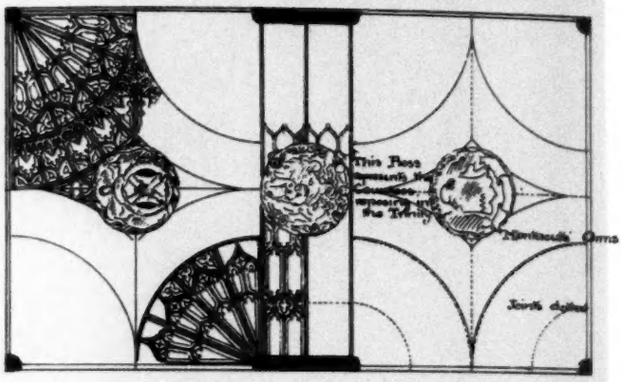
PHOTO-LITHO. SPRAGUE & CO., 52, MONTING LANE, CAMDEN ST., LONDON, E.C.

SALISBURY CHANTRY, CHRISTCHURCH, HANTS.

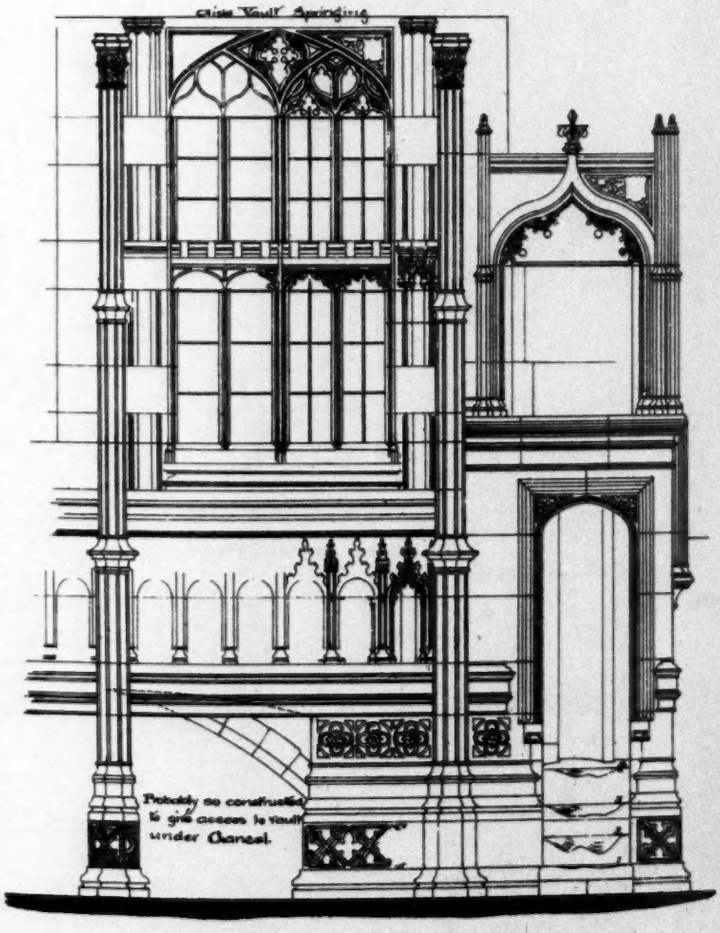
MEASURED AND DRAWN BY Mr. PERCY D. SMITH.

A. A. Travelling Studentship, 1890.

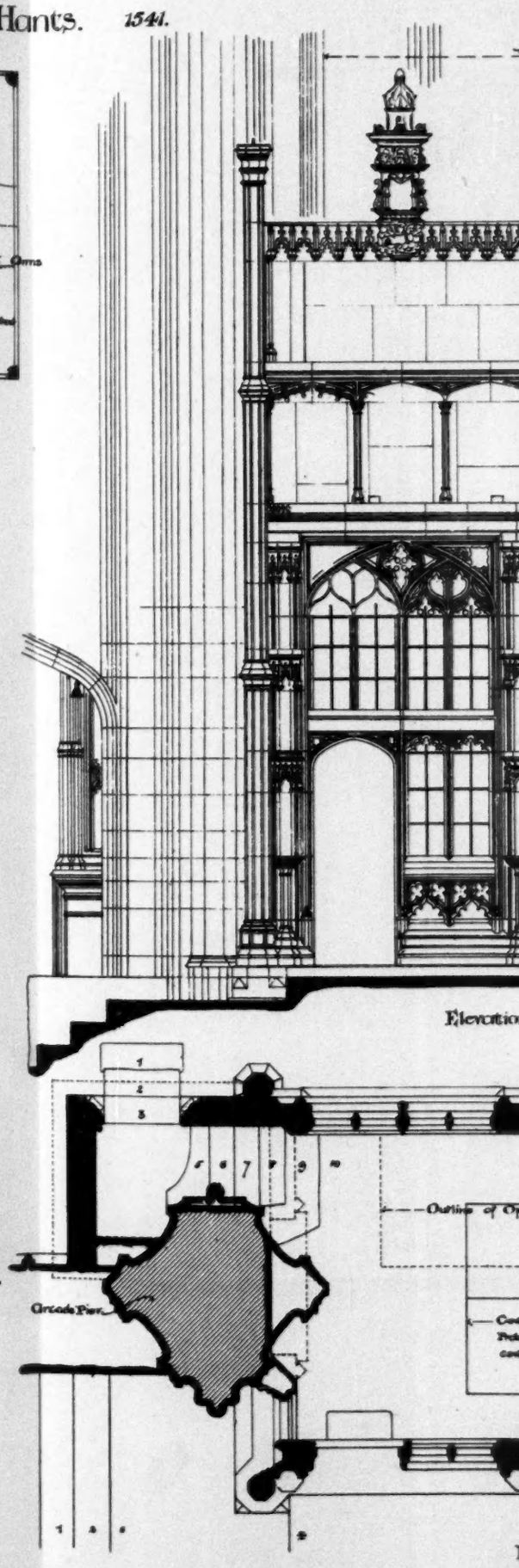
"Salisbury" Chantry, Christchurch, Hants. 1541.



Ceiling Plan.



Part Elevation to Aisle.



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Scale of Feet.

SALISBURY CHANTRY, CHRISTCHU

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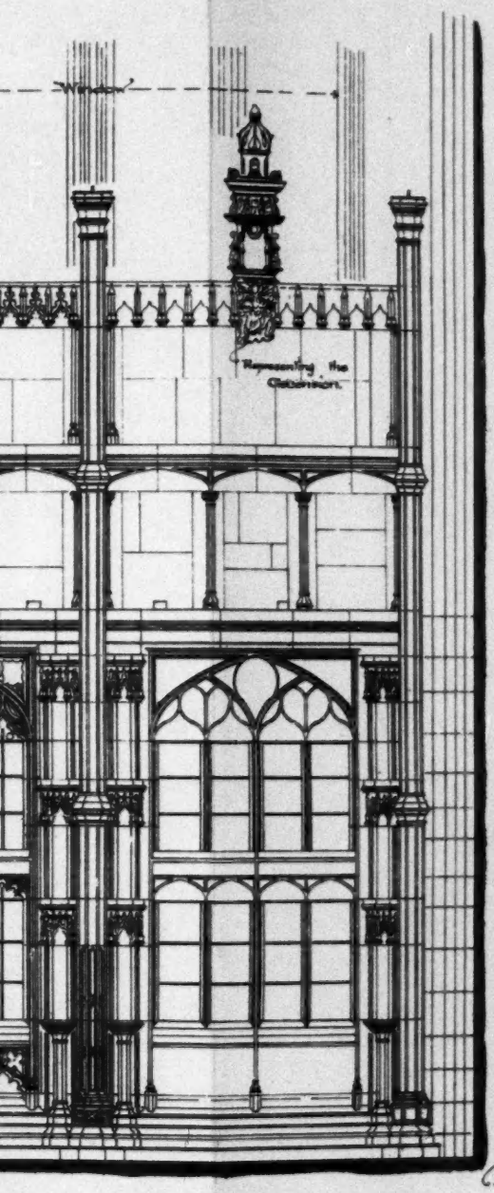
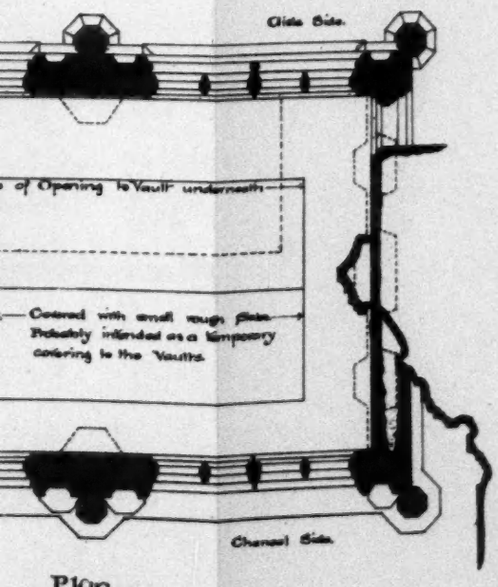
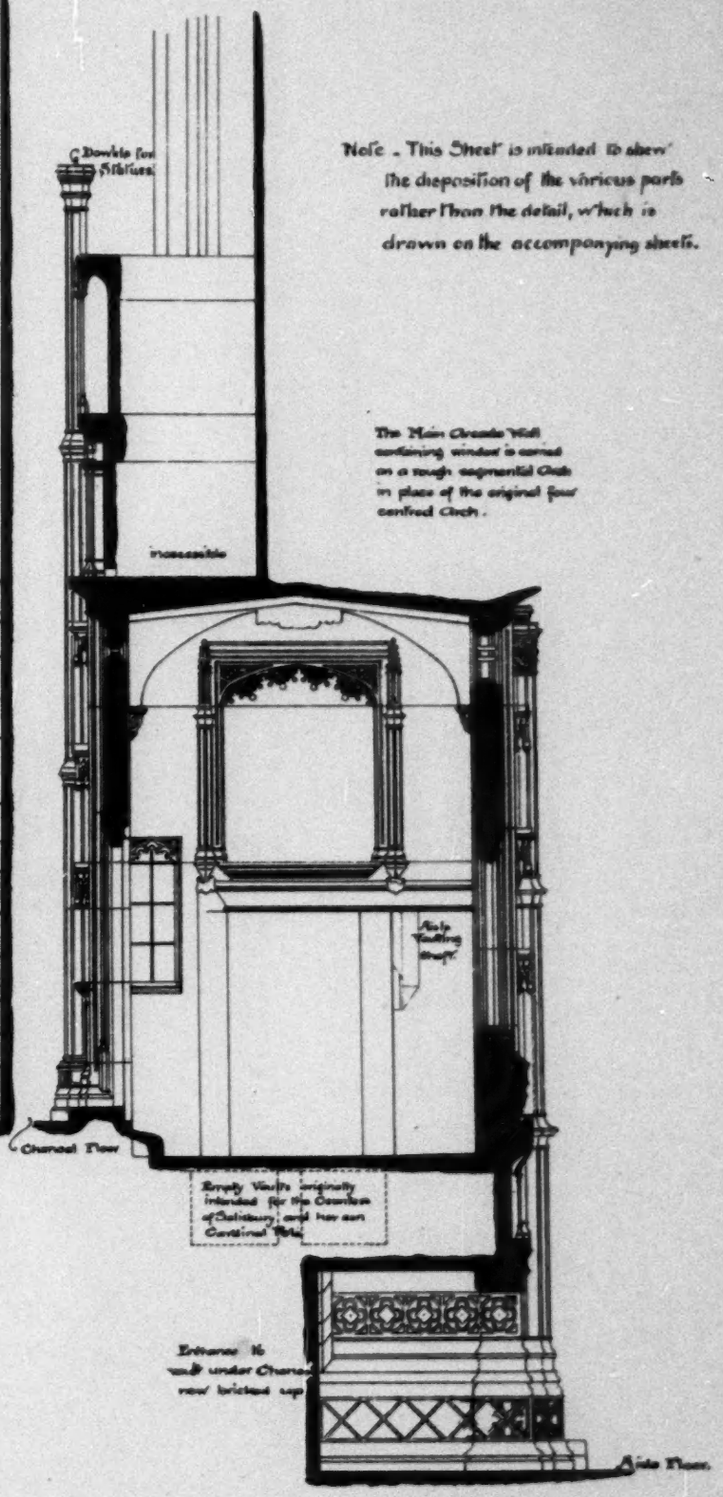


evation to Chancel.



Plan.



Section looking West.

Note. This Sheet is intended to shew the disposition of the various parts rather than the detail, which is drawn on the accompanying sheets.

The Main Arcade Wall containing window is carried on a rough segmental Arch in place of the original four centred Arch.

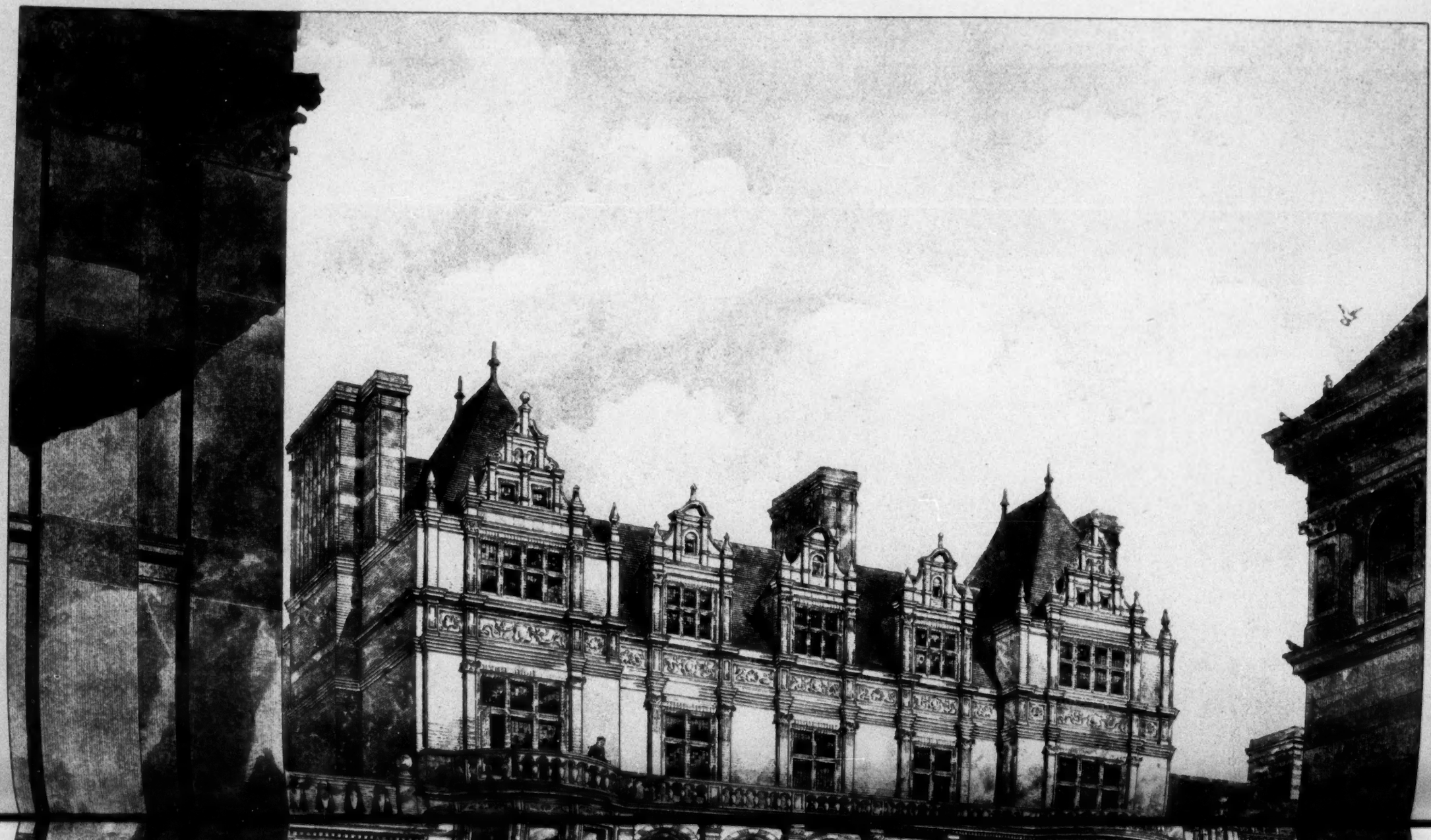
Built in Corn Stone throughout.

Cleerstead to Corneglasse.

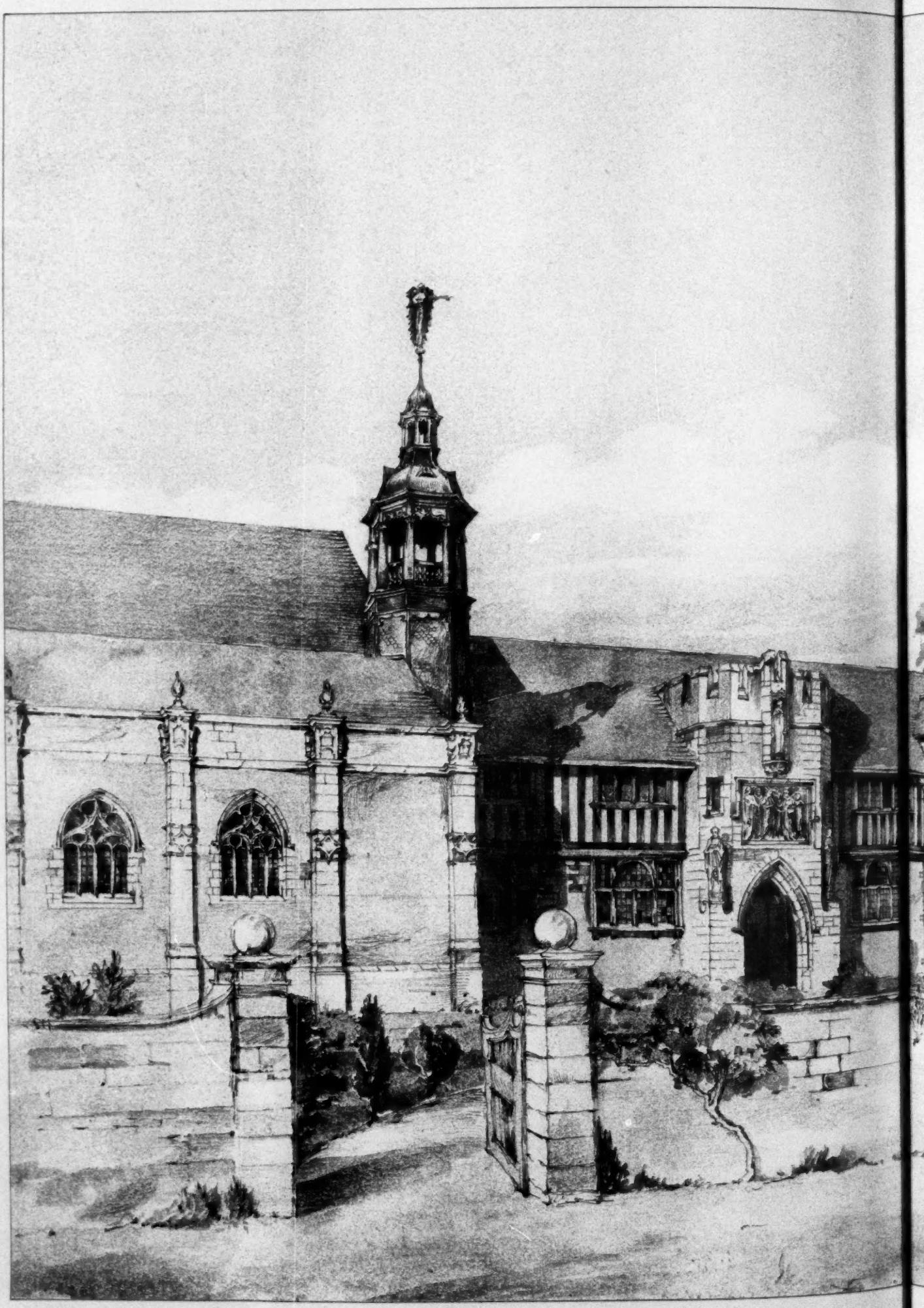
Measured & Drawn
March & April 1890.
Percy D. Smith

PHOTO-LITHO SPRAGUE & Co. 53 MARTINS LANE, CANNON ST. LONDON, E.C.

TCHURCH, HANTS.
R. PERCY D. SMITH.

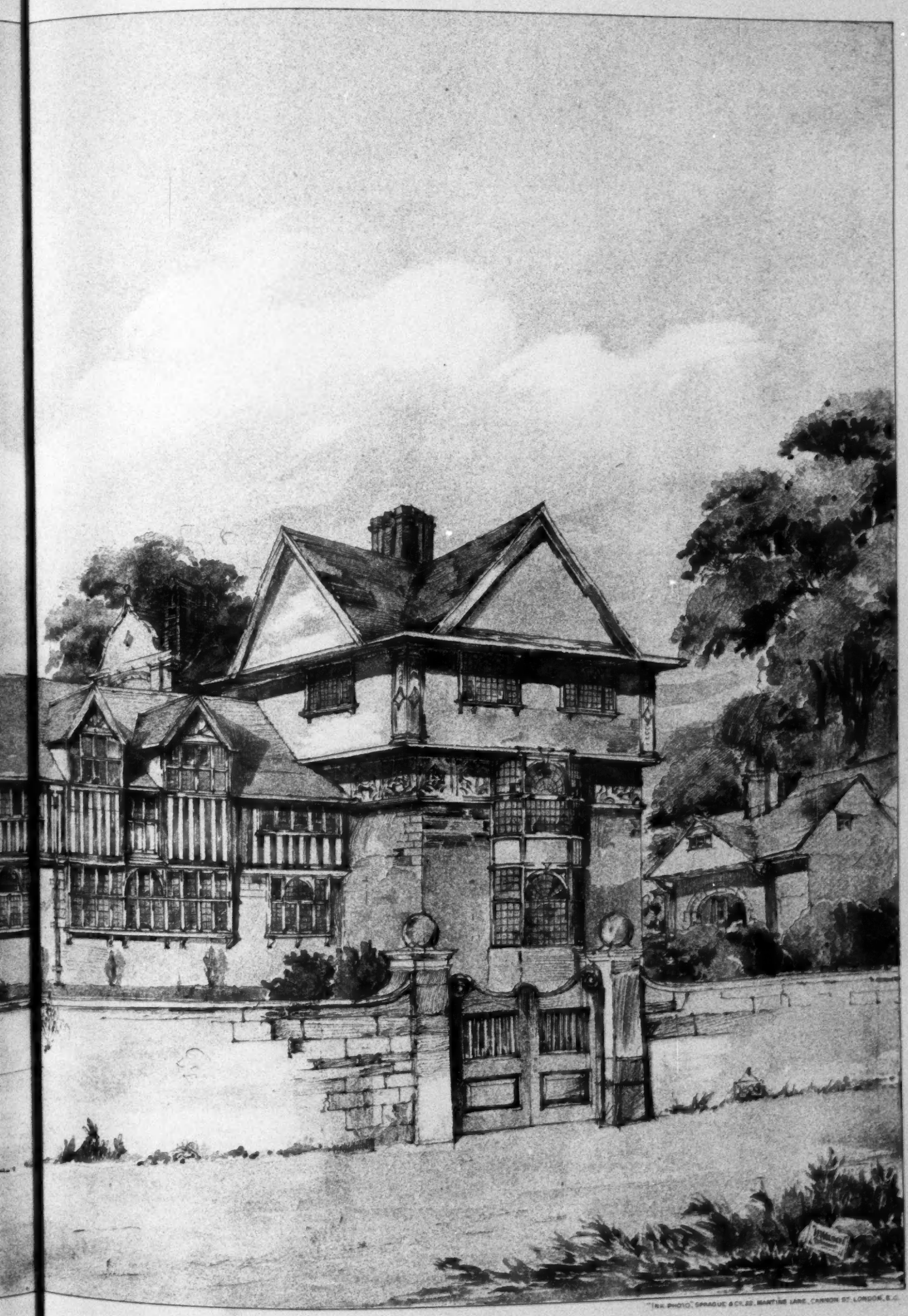


No. 1850 Royal Academy Exhibition, 1890.



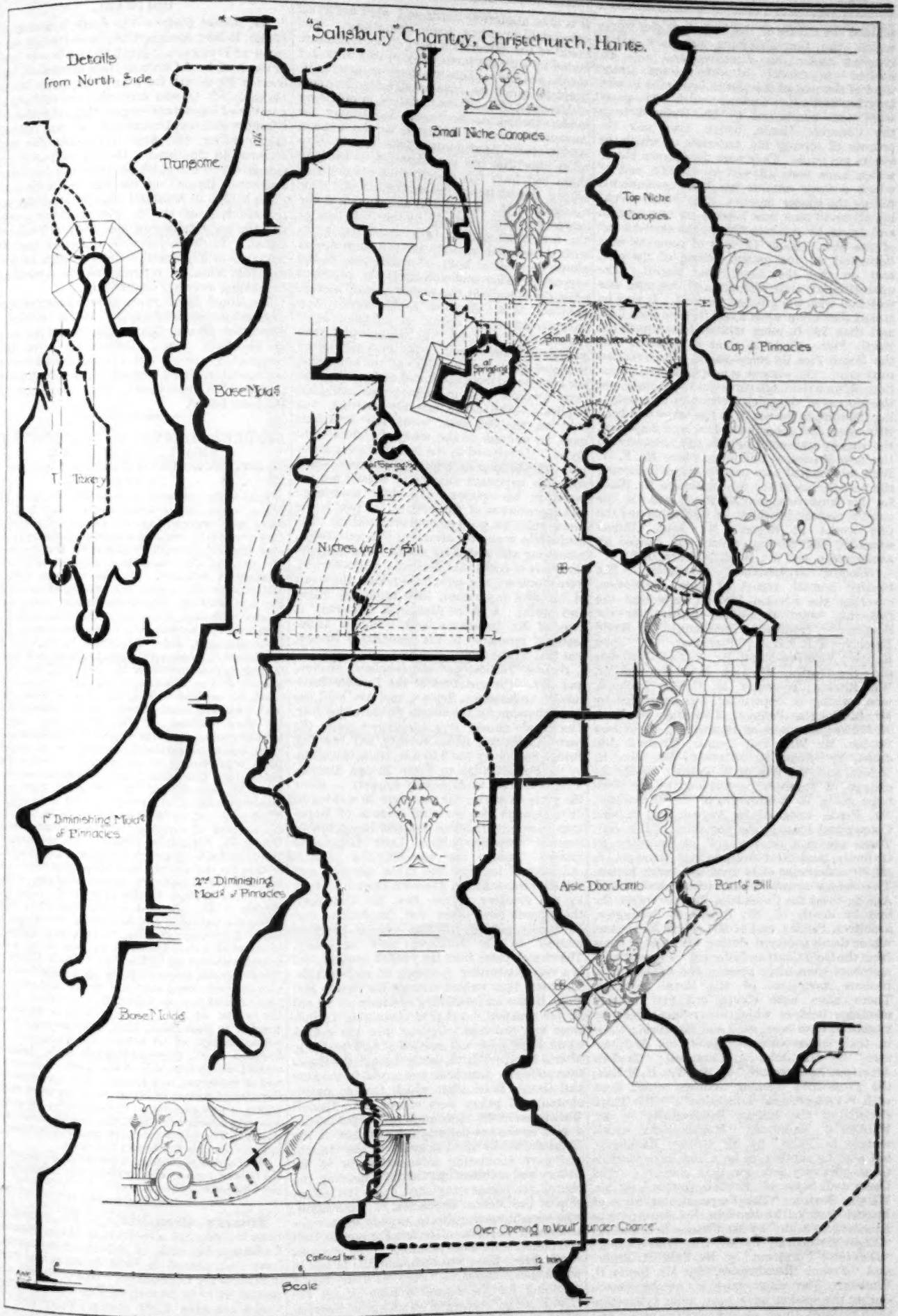
No. 1843 Royal Academy Exhibition, 1890.

INDUSTRIAL SCHOOLS, KNOWLE, BRIST



"INK PHOTO" SPRAGUE & CO. 22, MARTINS LANE, CANNON ST. LONDON, E.C.

, BRIST—MR. J. D. SEDDING, F.R.I.B.A., ARCHITECT.



Details of Mouldings, &c., Salisbury Chantry, Christchurch, Hants.

rellous preservation of the delicate carving, which is as good now as ever it was.

PERCY D. SMITH.

*** The sheet of mouldings here given, it should be explained, is not from Mr. Percy Smith's own drawing, which was unsuitable for reproducing, but from a tracing made from it.

ARCHITECTURAL SOCIETIES.

Northern Architectural Association. — The second summer gathering of the Northern Architectural Association took place on Saturday last at Sunderland, when there was a large assembly representing the profession in the whole of the district. They were received at the railway station by a number of Sunderland gentlemen, and also by Mr. Brightwen Binyon of Ipswich, who subsequently conducted them over the new Municipal Buildings in Fawcett-street, designed by him. On their arrival at Roker, the party were received by Mr. H. H. Wake (Chief Engineer) and Mr. G. T. Nicholson, his assistant. They proceeded to the Commissioners' Offices on the works, where Mr. Wake, by means of a large plan, ex-

plained the nature of the important pier works which the Commissioners are now carrying out under his direction, and also exhibited a model of the huge crane used at the end of the pier in laying the blocks, together with other working models. The party were next conducted by Mr. Wake through the Concrete House, where they saw the process of mixing the materials of which the blocks are made. They were then shown blocks which have been allowed to solidify, and of which a large number has been accumulated during the winter months. One block, weighing about 43 tons, was hoisted on to a waggon and drawn by a locomotive to the extreme end of the pier. About 15 tons of concrete were deposited on the second course of the pier, and on that the block was placed. The operation, at once difficult and delicate, was watched with the greatest interest. It may be stated that close upon 2,000 ft. have been laid, and that 760 ft. more remain to complete the North Pier. There is some expectation that the South Pier, its complement, will be started next year. The scheme is now under consideration. After a thorough survey had been made, and the process of dropping a concrete bag, weighing 105 tons, in the sea from the barge had been witnessed, and the subway had been inspected, the visitors returned to shore, and proceeded to the new Municipal Buildings, where Mr. F. W. Rich said he had very great pleasure in moving the best thanks of the Association to Mr. Wake for his kind reception of them, and for the careful manner in which he had explained the pier works at Roker. Mr. John Tillman seconded the motion, which was carried by acclamation, and Mr. H. H. Wake replied.

Glasgow Architectural Association. — The twelfth annual report of this Association, covering the Session 1889-90, says that the following were the office-bearers for the Session: — Honorary President, Mr. David Barclay, F.R.I.B.A.; President, Mr. John Keppie; Vice-President, Mr. William J. Anderson; Secretaries, Mr. Alex. M'Gibbon and Mr. Wm. Ritchie; Treasurer, Mr. George Tudhope, who, retiring in September, was succeeded by Mr. L. Douglas Penman; Librarian, Mr. Fred. M. Miller; Members of Committee, Mr. Wilson Beaton, Mr. Wm. Tait Conner, Mr. John Jas. Joass, Mr. Chas. R. M'Intosh, Mr. Wm. H. M'Nab, and Mr. Wm. M'W. Petrie. Beside the change of Treasurer, occasioned by Mr. Tudhope going to Edinburgh, of the Committee, Mr. Petrie resigned in August, and Messrs. Conner and Joass at the beginning of this year. There are now on the roll, 9 Honorary, 60 Ordinary, and 20 Corresponding Members, in all, 80; a decrease of 14 upon last year's Report. Twelve new members have joined and 26 left. Among these the Committee have to regret the loss by death of Mr. Robert S. Symington, architect, Paisley, and of Mr. Angus M'Auslane, whose death occurred during his passage home from the Gold Coast on furlough. Two ordinary members have, after passing the Examination, become Associates of the Royal Institute. There have been eleven ordinary monthly meetings held, at which essays, exclusively by members, have been read and discussed; these in their order were: — "Neo-Greek Architecture," by Mr. John A. Campbell; "Modern American Architecture," by Mr. Wm. H. M'Nab; the President's opening address, which dealt with "Architectural Education"; "The Three Periods of the Italian Renaissance," by Mr. William J. Anderson; "Mohammedan Architecture in India," by Mr. George Mackenzie, but read by another, as he a few days previous to its delivery left for that country; "The Decorated Style of English Gothic," by Mr. Wilson Beaton; "The Perpendicular Style of English Gothic," by Mr. John Jas. Joass; "The Elizabethan Style," by Mr. Charles R. M'Intosh; "Elgin Cathedral," by Mr. Wm. Tait Conner; "Domestic Furniture," by Mr. Fred M. Miller; and "French Renaissance," by Mr. Henry D. Walton. The visits, nine in number, made during the session have been more interesting than perhaps those of any previous series, and notable as including two made conjointly with the Edinburgh Architectural Association. The measurement of Glasgow Cathedral has progressed but little, although to encourage interest in the work, the Association Prize is this year offered to be competed for by apprentices for measured drawings of portions of the nave, north aisle. Undoubtedly it calls for no little self-sacrifice to labour at the less interesting work which necessarily bulks largely in such a large building if it is to be accurately illustrated, work not at all calculated to evoke much enthusiasm. The credit of the Association being in some measure bound up with the furtherance of this work, our thanks are due to those who have engaged in it. Specially would we acknowledge the kindness of Messrs. A. & D. Mackay, slaters, in providing ladders for the members' use. In October the Association became affiliated to the London Architectural Association. This was a step taken only after due consideration, as for long there had been felt a desire for closer union among the scattered Associations, if not their amalgamation. It would be unfortunate if the movement were hindered by the fact, that at the first there may be little actual return to such Association as ours for the subscription given the central body,—for that goes to the support of what undoubtedly is the principal educational body in the country,—the nearest approach to a College of Architecture. Any enlargement of its sphere of influence is of interest to us all, and it is likeliest that such growth of influence will be for good only as the wants of the junior members of the profession are known and recognised, and this can best be done by some such organisation as affiliation implies.——The usual monthly meeting was held on the 3rd inst., when the President gave an address on the study of architectural styles. He referred to the fact that the greater part of the papers read by members dealt with this important subject in detail; not too much, in his opinion. The right knowledge and appreciation of the work of the past is the surest guide for good modern architecture. The methods in vogue for attaining this knowledge, measuring and sketching actual buildings, and the study of books that illustrate works abroad, were discussed, and some hints added, the result of his own experience, that beginners might find useful. A short discussion followed. A copy of Mr. Anderson's book, "Italian Architecture," presented to the Association library, was laid on the table.

Dundee Institute of Architecture, Science, and Art.—The members of the Dundee Institute of Architecture, Science, and Art held the first excursion for the season on Saturday last. The place chosen was Linlithgow, and the party, numbering about seventy, left the Tay Bridge Station by the 9.55 a.m. train, travelling by the Forth Bridge to Forth Bridge Station, where the train was specially stopped to allow the party to alight. Brakes were in waiting to drive through the beautiful grounds of Hopetoun House, permission for this being kindly granted by Mr. Phillips, Lord Hopetoun's factor. Passing the mansion, the palatial character of its front was much admired, and the road was taken to Abercorn Church. Here, by the courtesy of the Rev. Mr. Crawford, the church was open for inspection, and he kindly pointed out the various parts of interest to the architect and antiquary. The church dates from the twelfth century, and is a very interesting specimen of architecture. The party then walked through the Den to Mid Hope House, an interesting specimen of an old Scotch mansion, dated 1582, containing a handsome oak staircase. Getting into the brakes again, Linlithgow was reached at half-past two, after a beautiful drive, partly through the Hopetoun policies. Luncheon was served in the Star and Garter Hotel, after which the old parish church and palace were visited. Mr. Russell Walker, architect, Edinburgh, who is publishing a work on the pre-Reformation churches of the Lothians, kindly acted as guide to the church, and gave interesting information as to its history and architecture. After inspecting the church, the palace was visited, under the leadership of the Messrs. Henderson, of Linlithgow, who were at much pains to explain the various sections of the ruin. The fine Parliament Hall and chapel were much admired. The room in which Queen Mary was born, and the bower in which Queen Margaret "wept the weary hour" watching for the return of King James IV. from Flodden were regarded with great interest. while the view from the bower amply repaid the toil of ascending the long staircase, the towers of the Forth Bridge looming in the distance. Having inspected the dungeons, torture-chamber, kitchens, stables, &c., connected with the Palace, the various interesting sights of the burgh were examined, such as the fish hatcheries on the loch and the portrait tablet of the Regent Murray, erected opposite the spot on the street where he was shot by Hamilton of Bothwellhaugh in 1570.—*Dundee Advertiser.*

OBITUARY.

Mr. Robert Hodge.—The death is announced of Mr. Robert Hodge, C.E., late Borough Surveyor of Plymouth. Mr. Hodge, who was born in the parish of Cardross, Dumbartonshire, has lived in Plymouth for nearly fifty years, but in his early life he was officially connected with a number of important engineering enterprises in Glasgow and neighbourhood. He was resident engineer on the first locomotive line constructed in Scotland. He was engineer of the Glasgow and Garnkirk Railway and the Govan Railway. He put up the first malleable iron-plate bridge in Scotland, and he superintended the erection of the St. Rollox chimney-stalk and the construction of the locks on Monkland Canal. In 1854 he was appointed Borough Surveyor of Plymouth, an office which he held till 1879, when he retired, and was retained as consulting surveyor-engineer.

Mr. Hugh Symington, the well-known railway contractor, died suddenly at his residence, Stewarton House, Coatbridge, on the 3rd inst., in his 58th year. During his career Mr. Symington carried out successful work for all the Scotch railway companies, the Glasgow and Greenock Corporations, and the Greenock Harbour Board.

RENDLE'S SYSTEM OF GLAZING: THE RIGHT TO THE NAME.

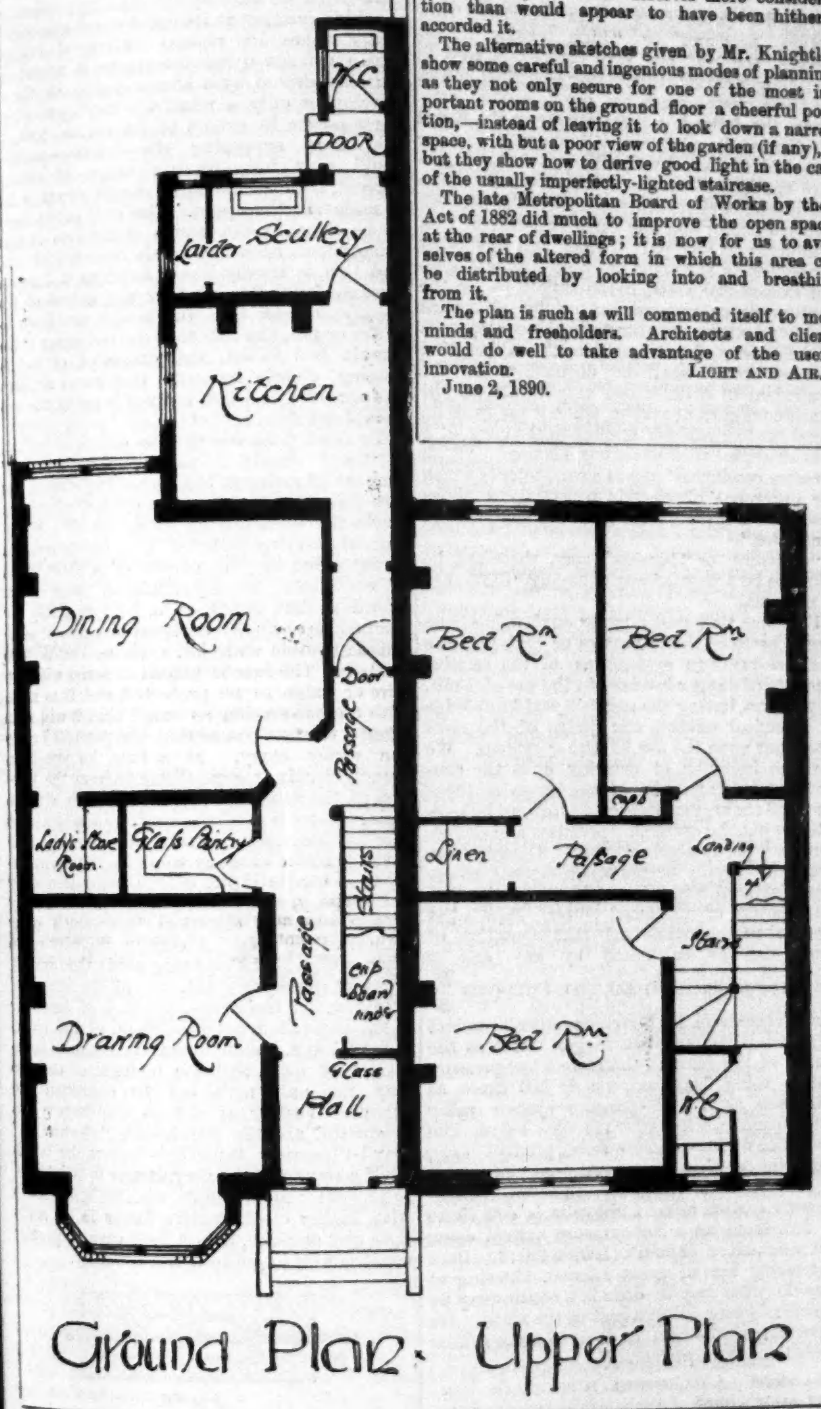
RENDLE *v.* J. EDGCUMBE RENDLE & COMPANY, LIMITED.

THIS case, reported at length in last Saturday's *Times*, came before Lord Justice Kay, and may serve as a warning against what is not an uncommon practice in trade of a person endeavouring to avail himself, through an identity or close similarity of name, of the reputation acquired by an old-established business. It was a motion by the plaintiffs in the action, the trustees of the will of the late William Edgcumbe Rendle, roofing contractor, and also proprietor of the Clarendon Hotel, Brighton, to restrain the defendant company and their manager, John Edgcumbe Rendle, a son of the testator, from carrying on the business of glass-roofing contractors under the name of J. Edgcumbe Rendle & Co., Limited, or any other name calculated to mislead the public into the belief that such company was carrying on or had succeeded to the business of W. Edgcumbe Rendle & Company, and to restrain the defendants from issuing advertisements, circulars, or prospectuses representing or calculated to mislead the public into the belief that the defendant company were, as assignees of the defendant, John Edgcumbe Rendle, or otherwise, entitled to the system of glazing used by W. Edgcumbe Rendle & Co. for the purpose of carrying out the contracts carried out by W. Edgcumbe Rendle & Co. mentioned in the defendant company's prospectus and circulars, or that the defendant, John Edgcumbe Rendle, was the inventor of Rendle's system of glazing, or was the senior partner in the firm of W. Edgcumbe Rendle & Co., or that he introduced their most successful patents; and to restrain the defendant, John Edgcumbe Rendle, from engaging in any business of a description in any way similar to the business carried on by the late William Edgcumbe Rendle, under the style of W. Edgcumbe Rendle & Co., or from doing anything to prejudice the business of that firm, or affect the sale thereof. Upon the death of the testator, William Edgcumbe Rendle, in September, 1881, disputes arose in the administration of his estate, which comprised his business of W. Edgcumbe Rendle & Co., formerly carried on by him in Victoria-street, Westminster, and at Battersea, and an action was commenced for the administration of his estate by the Court, which action is now pending. Subsequently, the action was commenced in which the present motion was made. The other facts of the case sufficiently appear from his Lordship's judgment.

His Lordship granted a perpetual injunction in the above terms, and ordered the defendants to pay the costs of the action.

Stuart's Granolithic. — We understand from the *Scottish Leader* that Messrs. Stuart & Company, Limited, of Edinburgh and London, have had placed in their hands several large contracts for Granolithic. One of these is connected with the New Hôtel Métropole, Brighton, which contains 1,309 rooms. Every room in the building, including corridors, is to be paved, —261,360 square feet, or six acres of paving in all,—thereby rendering the building fireproof. The surface of the paving is to be covered with cloth felt, on which the carpets are to be laid. This firm has also received contracts for the paving for the Local Boards of East Ham, Willesden, and South Hornsey, the new town of Barry, and other places. Altogether, it is stated that over 700 miles of the pavement have been laid in Great Britain, America, and the Colonies since 1882.

Plans accompanying letter by Mr. W. A. Pite.



"A PLEA FOR THE IMPROVEMENT OF SIX- AND EIGHT-ROOMED HOUSES."

SIR,—In all probability I am not the only one of your constant readers who, while admitting, with Mr. Knightley [see p. 398, *ante*] that there is vast room for improvement in the planning of six- to eight-roomed houses, are quite unable to accept the four alternatives which he submits as being in any way an improvement on what he terms the "ever-lasting plan," which, when carefully examined, has undeniable advantage over its companions.

In each case access or egress to or from the drawing-room for an afternoon caller is through a passage, the darkness of which is black as the historical "hole of Calcutta," where "twilight" never comes, and dirt is never seen, averaging about 30 ft. in length, passing the staircase, which surely is most objectionable, while in three cases odoriferous wafting from the kitchen, to say nothing of the addition of the scullery on washing-day, have to be met; while in two instances the going of the waste-preventers to the water-closets in such close proximity to the drawing-room is certainly detrimental to the comfortable occupation thereof.

Much more could be said upon the subject, but a little personal examination will suffice.

The annexed diagram is only a casual suggestion, drawing Mr. Knightley's "everlasting plan" pulled together, and which goes to show that it should not be so hurriedly condemned.

WILLIAM A. PITE.

SIR,—Mr. Knightley's letter, and the plans accompanying it in the *Builder* of the 31st ult., deal with a subject which deserves more consideration than would appear to have been hitherto accorded it.

The alternative sketches given by Mr. Knightley show some careful and ingenious modes of planning, as they not only secure for one of the most important rooms on the ground floor a cheerful position,—instead of leaving it to look down a narrow space, with but a poor view of the garden (if any),—but they show how to derive good light in the case of the usually imperfectly-lighted staircase.

The late Metropolitan Board of Works by their Act of 1882 did much to improve the open spaces at the rear of dwellings; it is now for us to avail selves of the altered form in which this area can be distributed by looking into and breathing from it.

The plan is such as will commend itself to most minds and freeholders. Architects and clients would do well to take advantage of the useful innovation.

LIGHT AND AIR.

June 2, 1890.

SIR,—I think Mr. Knightley's plans for six- and eight-roomed houses are ingenious, but he does not go far enough. Will he publish some plans of the upper floors?

E.

JUNCTION OF SOIL-PIPE WITH DRAIN.

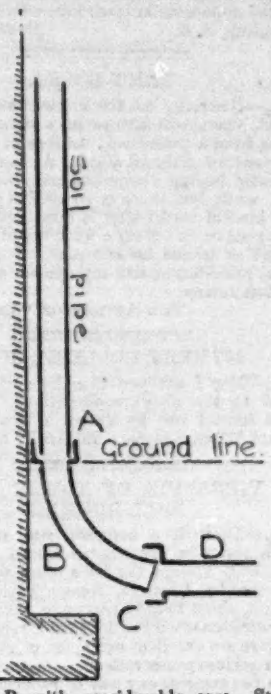
SIR,—I desire to draw attention to a danger and evil which seems to have escaped the notice of sanitarians.

Vertical soil-pipes frequently discharge their fluid from great heights. At the foot of the soil-pipe the vertical stream is diverted to a nearly horizontal direction by means of the earthenware *bend* which unites the vertical soil-pipe with the underground drain-pipe.

Great care is generally exercised by the architect, clerk of works, and builder, to make a good joint where the plumber's soil-pipe joins the earthenware bend. But the danger of leakage is much greater at the joint of this earthenware bend with the drain into which it discharges. I believe in the vast majority of cases if this last-named joint were examined a few years after the pipes have been in use, it would be found to be discharging a large percentage of the sewage into the foundations; and in this way converting the sites of single dwellings and of whole towns into concealed cesspools!

I speak from experience, many cases having come under my own observation.

This evil is not necessarily due to downright carelessness, though the more carefully drains are laid, the less they will settle and shift afterwards. Let it be assumed the drain has been so well bedded that the pipe, D, remains stationary without settling in the least degree, and let the pipe-bend be bedded



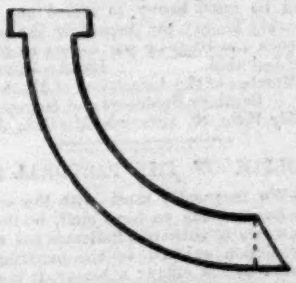
on clay, at B, with considerable care. Still the impact of the continually-repeated discharges of fluid, descending from a considerable height upon B, compresses the bedding of clay, and eventually forces the bend so far backward as to dislocate the joint of bend with D, discharging a large percentage of each flush from the w.c. through the joint at C into the foundations.

I have seen gable walls split from foundation to coping from having their foundations sapped in this filthy fashion.

Thanks to this heel of Achilles-Sanitarius, now, in 1890, in every large town, I believe there are thousands of dwellings, including those of the higher classes, standing thus on their own cesspools.

How can this be remedied?

I suggest the absolute necessity for bedding the upper end of pipe D, and the whole of the bend, *on solid concrete of considerable horizontal spread or area*. I also suggest that drain-pipe makers form the outfall ends of bends, not *square*, as usual and



as here dotted, but to a slight *bevel*, as per firm line on sketch, giving the pipe, so to speak, a slightly longer underlip than is now customary. And I also suggest that the architect or clerk of works and the surveyor for the local sanitary authority should henceforth personally *examine* the joint C of *old as well as new* drains; and I think if a general examination of such joints were instituted a vast danger to public health would be exposed in such hideous repulsiveness as to hasten a general overhaul and repair of such open joints as are now secretly vomiting death and corruption wholesale amongst us.

FRANK CAWS.

"BREAKWATER CONSTRUCTION."

SIR,—Referring to a description of a proposed mode of constructing breakwaters, &c., by Mr. P. H. Cheesewright, Assoc. M. Inst. C.E., published in your issue of the 7th inst., I do not wish to suggest that the inventor has been guilty of plagiarism, or that the proposed mode, or modes, of construction are not *bonâ fide* inventions, so far as those associated with them are concerned; but, the basis of the idea, the employment of ironwork in the construction of breakwaters, was advocated by me in the columns of *The Engineer* over two years ago. I proposed to use old railway rails.

W. GALLON, Assoc. M. Inst. C.E.

Highbury, N., June 9, 1890.

SPRAY JETS FOR WASHING.

WE notice a letter signed "W." in your issue June 7, 1890, p. 421. We shall be happy to give your correspondent any information he may require with regard to the washing apparatus referred to by Sir Edwin Chadwick. We made this for him some years ago, and it was exhibited, we believe, at the Inventions Exhibition, and we have the original apparatus in stock here now.

Lambeth, S.E. DOULTON & Co.

PRICE-BOOKS.

SIR,—Referring to the correspondence on this subject, there will always be a difficulty in estimating from a price-book, because of the variation in the cost of material alone. At one time I contemplated issuing a complete price-book for competition work, but there is so small a patronage for these kind of works that it would not pay for the time spent on it. Such a work would take a huge amount of labour for one man. I have reviewed several price-books, and my opinion coincides with your last review.

THE AUTHOR OF "ESTIMATING."

HYMERS' COLLEGE, HULL.

SIR,—May I ask you to make a correction with regard to the above competition? The design placed second was by Messrs. Wigram & Rawlinson, not Wigram alone. EDGAR T. A. WIGRAM.

VIBRATION OF TOWER FROM BELL-RINGING.

SIR,—There is a beautiful peal of bells in a church tower in my neighbourhood with a lofty spire, and, though the bells were mounted with every care by, I believe, Messrs. Taylor, of Loughborough, about twenty years ago, there is considerable vibration when the full peal is rung. The tower and spire are excellent examples of good masonry, and in perfect preservation.

Can you suggest any way of reducing this vibration by use of a compensating weight or otherwise? If a compensating weight is hung inside the spire, what rule is there to determine the length of the chain supporting the weight, and the dimension of the weight?

I can find no reference to this in any work on architecture. Perhaps some of your readers can help me. WILLIAM HENRY JOHNSON.

WOODEN WATER-PIPES.

SIR,—I have read with much interest the remarks in your paper upon this subject.

I have now in my possession a fine specimen of a wooden pipe with a bore of about 7 in., hollowed out of a trunk of wych-elm.

The spigot end is reduced in the manner shown on page 420 of the *Builder* of June 7, and measures about 8 in. diameter. This pipe was taken out of the river here yesterday, and I am told that various specimens have been found in Sheen and Mortlake from time to time.

I shall be most happy to afford any of your readers every facility for inspecting the pipe, and taking such drawings or particulars as they may consider desirable. HENRY RICHARDS,
Member of the Association of Municipal and Sanitary Engineers and Surveyors.

Murthly Villa, St. Leonards, Mortlake, June 11.

SYMBOLISM OF THE PASTORAL STAFF

SIR,—We frequently meet with the statement that the head of the pastoral staff, by its turning either inwards or outwards, indicates the extent of the jurisdiction enjoyed by the personage commemorated by the effigy; a bishop, it is said, will have his crozier head turned outwards, signifying the extensive jurisdiction of his See, and an abbot or abbess will have his or hers turned inwards, denoting the more limited jurisdiction over his or her establishment.

May I venture to say that such an opinion, though expressed by many very eminent men, is not, I believe, borne out by an inspection of the effigies remaining, and by adducing the following examples I shall attempt to disprove a statement which, so far as I know, is quite unsupported by facts, and an assertion alone, though I am well aware of that high value.

The brass of Richard Bewfforiste at Dorchester, Oxfordshire, *c.* 1520, represents the abbot with the head of his staff turned outwards.

The brass of Elizabeth Harvey, at Elstow, Beds, *c.* 1530, shows the abbess with her staff turned outwards.

The effigy of Bishop Hugh Tattershall, in Lichfield Cathedral, *c.* 1243, has the head of his staff turned inwards.

The effigy of Bishop Veasy, in the church of Sutton Coldfield, Warwickshire, *c.* 1555, shows the bishop with the head of his staff turned neither one way nor the other, but standing straight out, a very valuable example for my purpose, as apparently indicating that no importance was attached to the position of the crozier head.

HENRY LITTLEHALES.

The Student's Column.

ELECTRICITY, MAGNETISM, AND ELECTRICITY SUPPLY.—XXIV.

"HIGH AND LOW PRESSURE."

THE expressions "high pressure," "low pressure," or "high tension," "low tension," are very commonly used in speaking of mains distributing electrical power. As their precise meanings are somewhat arbitrary, the following quotations from the Board of Trade Regulations will show the sense attached to them by that body:—"'Low-pressure conductor' means a conductor in which the difference of electric potential either between that conductor and the earth or between that conductor or any part thereof and any other conductor on the same poles or supports does not exceed 300 volts, if the supply be on the continuous current system, or the equivalent of 150 volts if on the alternating current system. A difference of potential on the alternating current system shall be deemed to be the equivalent of a difference of potential on the continuous current system, when it produces an equal heating effect if applied to the ends of a thin stretched wire or carbon filament. 'High pressure conductor' means a conductor in which the difference of electric potential as above described is greater than that of a low pressure conductor."

"Pressure" or "tension" may, therefore, be taken to be a popular way of saying "difference of potential."

For some time past a paper warfare has been waged between the advocates of high-pressure and low-pressure systems as to the relative amounts of danger involved in the use of each. Any person, having the smallest real knowledge of electrical science, can judge of the risks attendant upon the use of either system. We have no intention of entering upon the controversy, but it may be of assistance to those who read the arguments brought forward by both sides to put the customary premises and deductions in a partly algebraic form. Danger from electricity supply occurs when electric power gets misplaced, and it is roughly proportional to the quantity of misplaced power. Now it has been shown (article v.) that quantity of power can be calculated by any one of the three products (*i*) EC, (*ii*) C^2R, (*iii*) $\frac{E^2}{R}$. The advocates of high-pressure select product (*ii*), and point out that danger varies as the square of the current, therefore a low-pressure system using 2,000 amperes is 400 times as dangerous as a high-pressure system using 100 amperes, since $(2{,}000)^2 : (100)^2 = 400 : 1$. The advocates of low-pressure select product (*iii*), and point out that danger varies as the square of the electro-motive force, therefore a high-pressure system using 2,000 volts is 400 times as dangerous as a low-pressure system using 100 volts, since $(2{,}000)^2 : (100)^2 = 400 : 1$. Both statements are of great interest, showing as they do what may be done in a controversy by judiciously concealing a part of the truth. We leave those who care to do so to make similar deductions from product (*i*).

FUSES.

Having considered the generation and distribution of electrical power, it is necessary to turn to some of the more important appliances, by means of which electricity supply can be safely used for various purposes. It may be convenient to trace the course of the current round some circuit, and to note the different pieces of plant or apparatus through which it flows, though in a few cases different devices have to be used for the continuous and alternating currents.

The main current may be supplied direct from dynamo-machines, or from secondary cells, or from machines and cells placed abreast. A most important difference must be pointed out in the cases where cells are and are not connected to the mains. If the resistance in the circuit of a secondary battery be lowered, the E.M.F. of the cells will not fall, at all events for some little time; the current from them will therefore increase in proportion, and should the resistance of the circuit be sufficiently reduced, the battery may give a current one hundred times that which it discharges under ordinary working conditions. Such a current, if allowed to flow for a short time into the mains, would make them red-hot and finally melt them. When dynamo-machines are used, unaided by cells, the consequences of unduly lowering the resistance of the circuit will not be nearly so serious. The characteristics of all machines (articles xv., xvi., xvii.) show that when the current flowing from them exceeds a certain amount, the electromotive force, owing to increased armature reaction, falls with extraordinary rapidity; indeed a machine running at its usual speed cannot give many times its normal output of current. Again, a large dynamo-machine is almost invariably driven by a steam-engine, capable of developing only a relatively small amount of horse-power in excess of its normal load, so that even supposing the dynamo-machine could give four or five times its working current, the steam-engine would certainly fail to maintain the speed. The only injury likely to be done to the mains themselves is that arising from an undue rise in their temperature, and this is hardly likely to occur if they are dynamo-fed. But whether the nature of the supply is such that the mains are likely to suffer or not, the fact that the resistance of the circuit has fallen, and excess of current is passing, clearly indicates that some accident has occurred and that current is going where it should not flow, probably doing great damage.

To avoid risks arising from excess of current, a "fuse" should be placed at both ends of each set of mains in the generating station, and also throughout the whole circuit, wherever a conductor branches off from one of a higher current-carrying capacity. There are many forms of fuses, but they all consist of a short length of conductor, usually made of some metal or alloy that melts at a comparatively low temperature, wholly enclosed in a case of some uninflammable material, such as earthenware or slate. The fuse is placed in series with the wire or cable to be protected, and it is made with a cross-section so small that it will melt when a current passes that the protected cable can easily carry. If a fuse be put in a branch circuit at some distance from the junction of the smaller wire of the circuit with the main, the portion of the conductor between the fuse and the main is wholly unprotected. This is the practice of many who wire private houses for the electric light, a fuse being frequently put in the lamp-switch, and accounts for many of the so-called electrical fires which occur from time to time. A certain difficulty arises when a high E.M.F. is being used; the fuse will break at some one point, and at the instant of breaking, the resistance, per mass of conductor in the immediate neighbourhood of the break, is very large, the temperature becomes, therefore, very high, and the material of the fuse may not only melt but be converted into vapour. Vapour at a high temperature is a conductor, and the well-known "electric arc" may be formed. When this occurs the fuse is itself a source of the very danger it is intended to prevent. Mr. Ferranti, who, we believe, deals with higher electromotive forces in his mains than any one else, uses a fuse case of peculiar construction to get over this difficulty.

Fig. 66.

The fuse A B, fig. 66, rests between two slabs of earthenware, the sections of which look like rows of arches. If vapour is formed, it is immediately cooled by being brought in contact with a mass of cold earthenware, it ceases to conduct, and the circuit is broken. Suppose, however, arcs are formed, the fuse can still be made to act; an arc opposes an E.M.F. to the current producing it, arcs can only be formed in the arches, by making a sufficient number of arches, therefore, an opposing E.M.F. is set up against which the current cannot flow.

A magnetic cut-out is frequently used as well as a fuse, the cut-out being made to act with a lower current than that which melts the fuse, the fuse being intended to go only when the cut-out fails to act. A magnetic cut-out consists of an electro-magnet with its coils placed in the circuit; to the armature of the magnet is attached a conductor which bridges over a gap in the circuit by dipping into two cups of mercury or some other form of contact to which also are joined the ends of the protected conductor. When the current exceeds a certain amount the magnet attracts its armature and pulls the bridge out of the circuit.

Books.

Blackie's Modern Cyclopædia of Universal Information. Edited by CHARLES ANNANDALE, M.A., LL.D. Vol. VI. Blackie & Son: London, Glasgow, Edinburgh, and Dublin.

THE sixth volume of this useful work, just issued, brings it nearly to the end of the letter P. It continues to exhibit the same excellent qualities as a popular cyclopædia, by which the former volumes were characterised, and architectural subjects and terms receive due attention in it, in proportion to the scale of the work. There is a good and tolerably long article on "Paris"; another on the "Post Office," into which a great deal of information is compressed. "Norman Architecture" is briefly but correctly characterised, with a woodcut of the interior of the Abbaye aux Hommes as an illustration of the style. The Cyclopædia ought to be a great boon to the smaller class of private libraries, in which more expensive and costly works of reference are unattainable.

Inventions and How to Patent Them. A Practical Guide to Patentees. By T. EUSTACE SMITH, Barrister-at-law. Third edition. Whitaker & Co. 1890.

THIS is an excellent little book, clear and concise. The fact that it has reached a third edition shows that it has been found useful. It will be useful, not only to laymen, but also to lawyers who wish to get an outline of patent-law fixed in their minds, for the leading cases on which the propositions of case-law are based are given. A good index and hard binding together make up a serviceable publication.

Newspaper Reporting in Olden Time and To-day. By JOHN PENDLETON. London: Elliot Stock. 1890.

THIS is one of the class of books which answers the demand now made by so many people for information as to the working of professions and occupations with which they have no other concern than what is sometimes called "enlightened curiosity." Mr. Pendleton's book is pleasantly written, and gives a sketch of the past history of Parliamentary reporting, in the days of such heroes of the old press as "Memory Woodfall," as he was called from the abnormal development of this faculty, which did for him some part at least of what the art of shorthand-writing has since achieved; and the author gives an account of the system by which the present elaborate and wonderfully rapid reporting of the Parliamentary debates is carried out. Some information on this latter head ought to be of interest to every educated reader, considering how immensely the whole political life of the country is indebted to and influenced by the full reporting of the leading daily papers. There is a chapter on shorthand, and one on "Experiences and Adventures of Reporters" which retails a good many anecdotes and *contretemps*, good and bad, among which we may cite that of the reporter at the Salvation Army meeting who was asked, "Are you saved?" and replied, "No, I'm a reporter."

A list of publications on newspapers and reporting is added to the book.

Sewerage Works, Walton-on-the-Hill, Liverpool.—The Walton Local Board have just completed an enlargement in their sewerage system. The present 24 in. outfall has been increased to 4 ft. 6 in. by 3 ft. 6 in. length of 2,930 yards, also a length of 1,100 yards of 3 ft. 2 in. cast iron pipes has been laid in addition to the present 18 in. pipes. At the sewerage farm, a small portion abutting the River Alt has been set aside for intermittent filtration. A large tank has been built of concrete, and faced with blue Staffordshire bricks, 100 ft. by 102 ft., containing with the present tank over 700,000 gallons, so that the whole of the sewage received between six p.m. and six a.m. next day may be stored for distribution at the latter hour. In case of flood, overflows are provided running direct to the filtration beds. To prevent flooding of cellars intercepting sewer has been constructed, about one mile in length, varying in size from 3 ft. by 2 ft. to 3 ft. 6 in. by 2 ft. 8 in. The scheme has cost nearly 20,000*l.*, and has been carried out by Mr. W. Hope, Earle-street, Liverpool, under the direction of the engineer, Mr. S. Middlebrook.

RECENT PATENTS.

ABSTRACTS OF SPECIFICATIONS.

9,011.—Chimney-top. J. J. Downes.

According to this invention, the chimney-top is constructed in terra-cotta or iron, galvanised or painted, the base having a flange to stand on the brickwork, and the pot being fitted with louvres. Above the louvres is fixed a cone, contracted at the top, and the dimensions of all the parts are regulated to the position of the chimney. A similar arrangement may also be applied as a ventilator for soil pipes, or an exhaust ventilator for dwelling-houses.

9,338.—Window-sashes. J. Ingleson.

The upper and outer sash is, by this invention, made narrower than the lower and inner one, to permit of the former being easily withdrawn from its race. The staff-beads are also divided at a suitable distance above the meeting-bar, and then the upper and lower portions are decreased in width to admit of the upper and outer sash being withdrawn. The object of the improvements is to provide means for withdrawing each sash separately, or both at the same time, and to dispense with the use of a large pocket at the upper portion of the frame; also these improvements may be applied to counterbalance sashes where the use of weights are dispensed with, in which case it will be found necessary to partially or wholly withdraw one sash at a time.

10,000, Glass Roofs. S. Deards.

This invention has reference to "dry glazing," and the chief object is to enable this to be effected without the use of purlins in which to secure the bars that receive the edges of the sheets of glass. Bars of X section run along the top of rafters, and are secured thereto by screws passed vertically through them into the rafters. Any water getting between the edges of the glass and the bars runs down the lower part of the bars, and escapes through holes made in the lower plate, which overlaps the eaves.

11,117, Paint-brushes. J. H. Dickson.

The object of this invention is to manufacture a brush with a bridle of thin sheet metal, provided with perforations so that snips or pieces may be severed from it as the bristles wear.

1,185, Extracting Cowl. C. J. Hunter.

Consists of a circular pipe carrying one or more truncated cones, and terminating with a hollow cone fitted to the shaft or chimney.

1,594, Ventilating and Flushing, &c. R. H. Wilding.

Ventilation is secured by outlets and pipes connected with the closet basin. The flushing arrangements are much more perfect than most other inventions, and thorough ventilation is secured.

NEW APPLICATIONS FOR PATENTS.

May 27.—8,203, C. Showell, Metallic Sashlifters.—8,208, A. Wright, Door and Gate Checks.—8,234,—W. Birch, Device for use with Lockbolts and Latches of Doors.

May 28.—8,277, C. Crawley, Window Fastening.—8,292, J. Kirkbride, Raising, Lowering, and Securing Window Sashes.—8,301, C. Huelser, Self-acting Cutting Apparatus for Brick Presses.

May 30.—8,358, G. Farmiloe & Sons, Water-closets.—8,376, J. Thompson, Urinal Flusher.—8,402, R. Frame & C. Neff, Water-Closet Fittings, &c.—8,404, F. Ross, Traps for Gullies, House-drains, &c.—8,410, T. Brown, Ventilators for House-drains, &c.—8,412, G. & G. Strawson, Attaching Glass to Greenhouses, Roofs, &c.

May 31.—8,428, H. Goodson, Water Waste-preventing Valve.—8,444, R. Oakeshott, Stoves and Fireplaces.—8,455, H. Major, Screws.—8,468, F. MacNalty, Doors.—8,482, H. Gould, Wood Screws.

PROVISIONAL SPECIFICATIONS ACCEPTED.

4,770, F. Botting, Operating the Outlet-valve of Water-closets.—5,796, E. Jeyes, Gulley-trap for Waste-water.—6,063, W. Silcock, Fastenings for Windows.—6,086, E. Edwards, Supporting Window and other Sashes.—6,147, A. Drummond, Glazing Structures.—6,171, J. Montgomerie, Scaffolding.—6,187, A. Overend, Greenhouses, &c.—6,616, T. Hughes, Door-closers.—6,747, C. Elliott, Apparatus for Exhausting or Removing Gases, &c.—6,844, O. Gray, Drain or Sewer-traps.—6,950, M. Rodgers, Ventilators.—6,952, C. Killner, Coating Iron, Steel, &c., with Portland Cement, &c.—7,160, W. Peace, Chimney-cowl.—7,387, A. Boult, Chimney-pots or Cowls.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to Opposition for Two Months.

9,807, J. Upton, Bolts or Fastenings.—10,770, E. Edwards, Movable Centerings for Masonry.—12,292, R. Condy, Paint or Pigment.—13,228, J. Oates, Painter's Brushes, &c.—5,268, S. Jennings, Draw-off Taps for Baths.—5,466, W. Thompson, Holding Doors or Window-sashes in a more or less open position.—5,837, D. Rawlinson, Metallic Framing for the Doors of Strong Rooms.

RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

MAY 27.—By MESSRS. COBB (at Rochester).

New Brompton, Kent—An enclosure of f. building land, 5a. 3r. 1p.	£350
Enclosures of f. building land, 105a. 3r. 17p.	7,050
A block of f. arable land, 16a. 2r. 14p.	750
"Barnsole Farm," and 26a. 2r. 33p., f.	1,750
Cliffe, near Rochester—F. marsh land, 9a. 2r. 21p., r. £20 p.a.	460
Enclosures of marsh, garden, and accommodation land, 40a. 2r. 17p., f.	2,315

MAY 29.—By THURGOOD & MARTIN (at Kingston).

Kingston, London-st.—Fourteen plots of f. land..	2,790

MAY 30.—By BAKER & SONS.

Hatfield, near—Enclosures of f. land, 70a. 0r. 38p.	2,200

MAY 31.—By W. BROWN & CO. (at Aylesbury).

Bierton, Bucks—"Barnett House," and 59a. 0r. 1p., f.	4,600
Weston Turville—F. accommodation land, 11a.	1,040
Aylesbury—A fee farm rent of £2. 1s. 4d.	45

JUNE 2.—By WEATHERALL & GREEN.

Lower Clapton—3 and 4, Wickham-pl., u.t. 10 yrs. g.r. £35	200

By UPTON & CO.

Mile End-rd.—Ten plots of land	2,250
"The Manor House," freehold	560

By C. W. DAVIES.

Hornsey—42 to 50 (even), Orpingley-rd., u.t. 87 yrs., g.r. £33, r. £179. 8s.	900
Finsbury-pk.—150 and 152, St. Thomas's-rd., u.t. 90 yrs., g.r. £12, r. £56	525

By LANGRIDGE & FREEMAN.

Clapton—150 to 156 (even), Powerscroft-rd., f., r. £158. 12s.	1,400
Poplar, Manilla-st.—"The North Pole" beer-house, u.t. 42 yrs., g.r. £10, r. £60	850
Surbiton Hill—1, South-ter., u.t. 57 yrs., g.r. £5, r. £75 p.a.	1,000
3 and 4, South-ter., u.t. 57 yrs., g.r. £10, r. £140	1,550
Leasehold stabling, u.t. 57 yrs., no g.r. r. £15..	280

By BRAN, BURNETT & CO.

Oxford-st.—F.g.r. of £70, with reversion in 74 yrs.	1,800
Harlesden, Baker's-rd.—F.g.r. of £74, with reversion in 94 yrs.	1,800
Shrewsbury-rd.—F.g.r. of £21, with reversion in 94 yrs.	515
Beckenham, Clifton Villas—F.g.r. of £49. 10s., with reversion in 87 yrs.	1,130
Wood Green, Dagmar-ter.—F.g.r. of £42, with reversion in 89 yrs.	955
Catford, Laurel-ter.—F.g.r. of £36, with reversion in 93 yrs.	800
Gresham Villas—F.g.r. of £30, with reversion in 92 yrs.	675
Harrow, Shelley-rd.—F.g.r. of £56. 10s., with reversion in 91 yrs.	1,250
Wimbledon, Palmerston-rd—F.g.r. of £20, with reversion in 87 yrs.	415
Walthamstow, Shernhall ter.—F.g.r. of £46, with reversion in 87 yrs.	915
Neasden-lane—F.g.r. of £11, with reversion in 95 yrs.	270
F.g.r. of £25, with reversion in 94 yrs.	585
F.g.r. of £60, with reversion in 91 yrs.	1,250
F.g.r. of £10, with reversion in 92 yrs.	270
Willesden—F.g.r. of £24, with reversion in 94 yrs.	490
Hackney, Montagu-ter.—F.g.r. of £60, with reversion in 87 yrs.	1,170
Epsom—Two plots of f. land in College-rd.	450
1 to 7, College-villas, f.	1,460
Mitcham—A plot of land in Grove-rd., f.	60

By WARLTERS & LOVEJOY.

Anerley—1 to 5, Trenholme-rd., f., r. £104 p.a.	910
Bethnal-green—80 and 82, Cambridge-rd., f.	915
95, Cleveland-st., f.	390
A f. site in Devonshire-st.	760

JUNE 3.—By MARCH, MUNCY, & CO.

Peckham—4 and 6, Commercial-rd., u.t. 29 yrs., g.r. £7. 9s., r. £64. 10s.	400

By A. BARTON.

Sydenham—5, Grosvenor-pl., f., r. £45 p.a.	600

By E. G. SIM.

Islington—157, Southgate-rd., u.t. 41 yrs., g.r. £5	450

By OSBORNE & MERCER.

Malmesbury, Wilts—A plot of f. garden land	135
A plot of f. orchard land, 1a. 1r. 4p.	225

By SHERRIN & COLTMAN.

Wandsworth—102, Trinity-rd., part f. and part l., u.t. 73 yrs., g.r. £10. 10s.	500

By MESSRS. WOODS.

Palmer's-green—An enclosure of f. land, 16 a.	2,000

By A. RICHARDS.

Bethnal-green—95, Church-st., f., r. £50 p.a.	600
Whitechapel—20, King Edward-st., f., r. £49. 8s. p.a.	420
"The Queen Adelaide" beer-house, f.	630
2 to 10, Ecle-pl., f.	720
25 to 29, Spring-gardens, f., r. £65	400
180, Hanbury-st., f., r. £34 p.a.	420
St. George's-in-East—25, Prince's-sq., f., r. £45	500

By NEWBON & HARDING.

Islington—1 to 9, Balls Pond-pl., u.t. 42 yrs., g.r. £36	1,400
81, Britannia-row, f., r. £25	320
Mildmay-pk.—10, Mildmay-grove, u.t. 62 yrs., g.r. £8, r. £48 p.a.	360
Pentonville—48, Wharton-st., u.t. 64 yrs., g.r. £8.	470
Wood-green — 2, Somerset-villas, u.t. 76 yrs., g.r. £6	130
Notting-hill—27 and 28, Elgin-mews, u.t. 72 yrs., g.r. £8, r. £56	480

By DEBENHAM, TEWSON, & CO.

Luton, Beds.—The Bramingham Estate of 846a., f.	22,500
Soho—40, Dean-st., f., r. £75 p.a.	1,300
Oxford-st.—No. 464, u.t. 39 yrs., g.r. £7, r. £275 p.a.	3,575
Portman-sq.—50, Seymour-st., u.t. 40 yrs., g.r. £10. 10s., r. £120	1,490
Dorset-sq.—42, Balcombe-st., u.t. 30 yrs., g.r. £30, r. £65	270

Bermondsey—16 to 22 even, Little Cherry Garden-st., and 511 to 519 odd, Southwark Pk-rd., f... £750
Worthing—An enclosure of f. land, 1a. 0r. 4p., r. £20 p.a. 1,200

JUNE 5.—By BRAY, YOUNG, & Co.

Victoria-pk.—47, 53 and 55, Ellesmere-rd., f., r. £114. 8s. p.a. 995
Bow—12 and 14, Vivian-rd., f., r. £72. 16s. p.a. .. 740
Victoria-pk.—15, 16 and 17, Hamilton-rd., u.t. 48 yrs., g.r. £9, r. £80. 12s. 445
18, 19, 19½, and 20, Hamilton-rd., u.t. 48 yrs., g.r. £9..... 535

By F. GILES & Co.

Putney—1, Hotham-villas, u.t. 23 yrs., g.r. £10 .. 580
2, Hotham-villas, u.t. 23 yrs., g.r. £9, r. £67. 10s. p.a. 520
L.g.r. of £19 p.a., u.t. 23 yrs. 280
6, Hotham-villas, and a plot of land, u.t. 23 yrs., g.r. £5..... 450
The residence "Hotham Lodge," u.t. 23 yrs., g.r. £6..... 430
L.g.r. of £44. 19s. p.a., u.t. 23 yrs. 560

By H. J. PHILLIPS.

Tottenham—14, 15, and 16, Clyde-rd., u.t. 87 yrs., g.r. £15. 15s., r. £78 375

By C. C. & T. MOORE.

West Ham, Church-st. North—A plot of f. land.. 170
Poplar—70 and 72, Bygrove-st., u.t. 38 yrs., g.r. £5. 5s. 120
93 and 95, Kerby-st., u.t. 52 yrs., g.r. £6 200
Tottenham—3 and 4, Laurel Cottages, u.t. 75 yrs., g.r. £9..... 200

By BRAN, BURNETT & Co.

Abergavenny—"The Hill," and 27 acres, f. 8,400

By F. JOLLY & Co.

Wood Green—26 to 34 (even), Bilsoe-rd., u.t. 91 yrs., g.r. £28 15s. 950
Lower Clapton—112 and 114, Dunlace-rd., u.t. 80 yrs., g.r. £11. 10s. 360
61, Clifden-rd., u.t. 74 yrs., g.r. £10, r. £26 p.a. 185

By J. A. & W. THARP.

City-rd.—11, Brunswick-pl., u.t. 27 yrs., g.r. £35.. 250
Hackney—36, Glaskin-rd., u.t. 65 yrs., g.r. £4. 4s., r. £28 270
Stepney—17, Rhodeswell-rd., f., r. £32 p.a. 400
Kingsland—79, Pearson-st., u.t. 23 yrs., g.r. £3. 10s. 155
Twickenham—L.g.r. of £52. 10s., u.t. 37 yrs., g.r. £15 475
Lisson-grove—72, Salisbury-st., u.t. 31 yrs., g.r. £15 125
Hornsey, St. Ann's-rd.—F.g.r. of £32 p.a., with reversion in about 97 yrs. 720
Wanstead—Two plots of f. land 300
Hornsey—44, 46, and 48, St. Joseph-rd., f., r. £62. 8s. 525
F.g.r. of £4, with reversion in 92 yrs. 90

By REYNOLDS & EASON.

City—20, Steward-st., f. 1,300
Brunswick-sq., Marchmont-st.—L.g.r. of £181. 7s., u.t. 10 yrs., g.r. £44 750
L.g.r. of £205. 4s., u.t. 14 yrs., g.r. £51. 15s. 6d. 2,020
Homerton—3 to 13 (odd), Bridge-st., f., r. £107. 18s. p.a. 1,045
31 and 32, Bridge-st., and 181, 183, 185, Morning-lane, f., r. £96. 4s. 1,030
Hackney—6 to 11, Willow-walk, f., r. £113. 15s., p.a. 900
Bethnal Green—177 to 183 (odd), Brick-lane, and 11, Peter-st., u.t. 34 yrs., g.r. £48; 242, 244, and 246, Brick-lane, and 1, 2, and 3, Princes-ct., u.t. 32 yrs., g.r. £32; 4, 5, and 6, Princes-ct., u.t. 17 yrs., g.r. £30 1,800

By NEWBON & HARDING.

Bow—42, Tredegar-rd., u.t. 83 yrs., g.r. £5. 5s., r. £36 300
Upper Holloway, St. John's-rd.—F.g.r. of £28, with Reversion in 87 yrs. 710
Miranda-rd—F.g.r. of £7, with Reversion in 87 yrs. 175
Old Ford—268, Roman-rd., f., r. £55 p.a. 700
418, Old Ford-rd., f., r. £28 p.a. 300
Homerton—18 to 46 (even), and 19 to 47 (odd), Sedgwick-st., f. 5,975
Bethnal-green—214 to 220 (even), Globe-rd., f., r. £114 8s. 1,160
490, Bethnal-green-rd., f., r. £55 720
2 to 22 (even), and 1 to 49 (odd), Gale's-gardens, f., r. £1,397. 10s. 8,750
A plot of f. land in Gale's-gardens 625
25 & 27, Peel-grove, 23 to 35 (odd), Patriot-sq., l., r. £371. 16s. 2,200
1 to 10, Victoria Mews, u.t. 63 yrs., g.r. £13, r. £103. 14s. 460
20, 22, & 24, Thorold-st., u.t. 81 yrs., g.r. £10. 4s., r. £89. 14s. 500
Stoke Newington—2, 4, & 6, Milton-rd., f., r. £91. 18s. p.a. 1,070

JUNE 6.—By DEVERELL & Co.

Marylebone—128, Great Tichfield-street., u.t. 18 yrs., g.r. £30 450
40, Upper Marylebone-street, u.t. 8 yrs., g.r. £18 250
41, Upper Marylebone-street, u.t. 33 yrs., g.r. £10 775

By A. G. WINDSOR.

Kingsland—127, De Beauvoir-rd. u.t. 31 yrs., g.r. £4 270

By C. SLEE & SON.

Brixton—42 & 44, Josephine-avenue, u.t. 76 yrs., g.r. £21, r. £98 920
Stockwell—30, Bellefields-rd., u.t. 75 yrs., g.r. £5. 10s., r. £30 270
Camberwell New-rd.—L.g.r. of £26, u.t. 10 yrs., g.r. £15. 16s. p.a. 130

By RANDALL, BEARD, & BAKER.

Holloway—29, St. James's-rd., u.t. 71 yrs., g.r. £5, r. £40 300
East Finchley—17, Vernon-ter., f. 300

[*Contractions used in these lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.]

MEETINGS.

MONDAY, JUNE 16.

Royal Institute of British Architects.—(1) To ballot for candidates who desire to be admitted as members. (2) To present the Royal Gold Medal to Mr. John Gibson, Past Vice-President, for his works as an architect. 8 p.m.

TUESDAY, JUNE 17.

Society of Engineers.—Visit to the Thames Ironworks, Blackwall, and inspection of the ironclads in course of construction.

Statistical Society.—Mr. G. G. Chisholm, M.A., B.Sc., on "An Examination of the Coal and Iron Production of the Principal Coal and Iron Producing Countries of the World, with reference to the English Coal Question." 7.45 p.m.

WEDNESDAY, JUNE 18.

Meteorological Society.—Four papers to be read. 7 p.m.

British Archæological Association.—(1) Mr. J. M. Wood on "Some of the Round Towered Churches of Essex." (2) Alderman C. Brown on "The Discovery of a Roman Column at Chester." 8 p.m.

SATURDAY, JUNE 21.

Liverpool Engineering Society.—Visit to the Thirlmere Aqueduct.

Miscellanea.

The Pharmaceutical Society of Great Britain.—About three years ago this Society built an examination hall, dispensaries, research laboratories, &c., at the rear, in Galen-place, but the approach was a very bad one, and the connexion with the old building extremely inconvenient, besides which more accommodation was necessary for committee-rooms and offices, &c. Consequently, it was resolved to secure the two old houses adjoining, viz., 15 and 16, Bloomsbury-square, and erect thereupon the auxiliary structure. Messrs. Lansdown & Harriss are the architects who have connected the whole block conveniently with the existing building, and designed an elevation facing the square. The lower part is Portland stone, supporting two large bays on the first floor, and the upper part is red brick, with Portland stone dressings and cornices. From the entrance doors the examination hall is reached by a straight corridor, the old building being accessible by doorways with iron doors. The new building is adapted for the whole of the official work, and comprises secretary's and clerks' offices, stores, strong-room, lavatories, committee-rooms, president's room, and handsome council-chamber with oak door, dado, sashes, floor and carved chimney-piece. Messrs. Kirk & Randall are the builders, and Mr. H. R. Butson, the clerk of works; and the following specialist firms have contributed to the work:—Electric light, bells, gas, hot water and speaking tubes, Messrs. Strode & Co.; stone staircase from the Hopton Wood Quarries, Wirksworth, Derbyshire; wrought iron panels to ditto, Messrs. Jones & Willis; ventilation, Messrs. R. Boyle, Son, & Co.; chimney-pieces, Messrs. A. J. Arrowsmith & Co.; sanitary fittings, Messrs. J. Tylor & Sons; Parian plastering (including cornices and mouldings) and granolithic floors, Mr. J. Bickley; art decoration to ceilings and friezes, Messrs. G. Jackson & Sons; mosaic paving, Messrs. De Grelle, Hondret, & Co.; tiling to staircase dado, Messrs. Minton & Co.; lift, Messrs. Waygood & Co.; locks and fastenings, Messrs. Kaye & Sons' "push and pull;" fanlight and sash openers, Messrs. W. & R. Leggott; fire main, hydrant, &c., Messrs. Shand & Mason; strong-room, door, &c., Messrs. Chubb & Son. The opening of the whole premises as being completed was inaugurated by a conversazione, when a large and distinguished company congratulated the architects upon the success of their labours.

Removals.—Mr. T. Fairbairn, Hon. Sec. of the Edinburgh Architectural Association, asks us to note that he has removed from 5, N. St. David-street, to 35, S. Castle-street.——Mr. H. L. Beckwith, Hon. Sec. of the Liverpool Architectural Society, asks us to mention that the Library of that Association has been removed from No. 9, Cook-street to 15, Cable-street.

Water Supply, Earls Barton.—We are informed that the Wellingborough Rural Sanitary Authority have instructed Mr. W. H. Radford, C.E., of Nottingham, to prepare a scheme for the Water Supply of Earls Barton, as an alternative to a scheme previously submitted by a local engineer.

St. Werburgh's, Derby.—We are informed that at a meeting of the general committee for the rebuilding of St. Werburgh's, Derby, it was unanimously agreed that Sir Arthur W. Blomfield, A.R.A., be the architect for the rebuilding of the church, which is to cost 9,000*l.*, towards which about 5,000*l.* are already forthcoming.

The English Iron Trade.—Although there has been a reaction in the Glasgow and Middlesbrough markets, the English iron market, taking it on the whole, has not gained in strength, notwithstanding the favourable nature of the Board of Trade returns for May. The Glasgow warrant-market has seen better prices this week, and shown greater firmness, while some branches of Scotch makers' iron are quoted higher. Cleveland iron has improved to the extent of 1s. 3d. per ton since last week, and the market is a little stronger. From other districts, however, reports as to the state of the pig-iron trade continue unfavourable. Some makers of Bessemer iron in the north-west are ready to sell their produce as low as 51s., or 4s. lower, while hematite warrants rule at 50s. 6d. The finished iron market is unsettled, and there is considerable depression in the sheet and hoop iron departments, while shipbuilding iron and steel is in declining demand. The feeling in steel has not improved, and the competition for orders is keen. Shipbuilders are no better off as regards fresh work, both engineers are doing fairly well.—*Iron.*

Fire at the Works of Messrs. Peto Bros., Pimlico.—On Wednesday about midday a fire of great magnitude broke out at Pimlico, in a great area of ground, bounded by Gillingham-street, Hindon-street, Berwick-street, and Wilton-road; and the property on which the fire originated was the extensive series of workshops and stores owned and occupied by Messrs. Peto Bros., builders. According to the *Times*, the flames suddenly burst out in the centre of the block of buildings, while the works were in full operation and all the hands busily engaged. The fire extended rapidly. The fire was not overcome until after many hours of hard work; and although the destruction of the dwellinghouses and shops surrounding the fire was fortunately prevented, Messrs. Peto's large buildings were entirely gutted, and, as is shown by the official report, very serious damage was caused to other property.

The Sanitary Institute's Congress at Brighton.—A deputation from the Institute visited Brighton on Saturday, and met the Mayor and other members of the committee for the purpose of further considering the Congress and Exhibition to be held in the Pavilion Buildings at the end of August. The large Dome of the Pavilion, the Corn Exchange, and the Picture Gallery are all devoted to the Exhibition, but the applications for space are considerably in excess of previous years, and probably some difficulty will be found in accommodating exhibitors.

Institution of Mechanical Engineers.—Sheffield is to be visited this summer by the Institution of Mechanical Engineers, and arrangements are being made to give the members a fitting reception. A committee for this purpose was appointed a short time since, of which the Mayor is chairman, the Master Cutler the vice-chairman, Mr. R. A. Hadfield honorary treasurer, and Professor Ripper and Mr. R. Heber Radford the honorary secretaries. It is expected that nearly 400 members will be present.

Camden-place, Chislehurst.—This historic mansion and park, which formed the subject of a paragraph in our columns on May 17, are to be sold at the Auction Mart on the 27th inst. by Mr. David J. Chattell. The first edition of the "Particulars," now before us, gives a view of the mansion, and two suggested plans for the "development" of the property by cutting the greater part of the park into building plots.

The Edinburgh Public Library was opened on Monday last by Lord Rosebery. It will be remembered that in 1886 Mr. Carnegie, of Pittsburg, offered to the City of Edinburgh the handsome sum of 50,000*l.* to build a public library if the citizens would adopt the Public Library Acts. In October of the same year they resolved to do so, and subsequently steps were taken to carry out the resolution in conjunction with the Corporation, the members of which are, in the first instance, charged with certain responsibilities connected with the provision of suitable buildings and furnishings for the Library. From among several competing designs, those of Mr. Washington Browne, architect, Edinburgh, were selected, and the Library has been built from his designs on the site of the old Hope House, Cowgate. We gave interior and exterior views and plans of the Library in the *Builder* for July 16, 1887.

PRICES CURRENT OF MATERIALS.

TIMBER.	£.	s.	d.	£.	s.	d.
Greenheart, B.G. ton	6	10	0	7	10	0
Teak, E.I. load	11	0	0	14	0	0
Sequoia, U.S. foot cube	0	2	3	0	3	0
Ash, Canada load	3	0	0	4	10	0
Birch ,,	3	0	0	5	0	0
Elm ,,	3	10	0	4	15	0
Fir, Dantsic, &c.	1	15	0	3	10	0
Oak ,,	2	10	0	4	10	0
Canada	5	10	0	6	10	0
Pine, Canada red	2	10	0	3	10	0
,, yellow	2	0	0	5	5	0
Lath, Dantsic fathom	5	0	0	6	0	0
St. Petersburg	5	0	0	7	0	0
Wainscot, Riga, &c. log	0	0	0	0	0	0
Deals, Finland, 2nd and 1st. std.						
100	7	15	0	10	0	0
,, ,, 4th and 3rd	7	0	0	7	10	0
Riga	6	0	0	8	10	0
St. Petersburg, 1st yellow	9	10	0	14	10	0
,, 2nd ,,	7	10	0	9	0	0
,, white	7	0	0	10	0	0
Swedish	7	0	0	15	0	0
White Sea	8	0	0	17	0	0
Canada, Pine, 1st	15	0	0	26	0	0
,, ,, 2nd	10	0	0	16	10	0
,, ,, 3rd, &c.	7	0	0	10	0	0
,, Spruce, 1st	8	15	0	11	0	0
,, ,, 3rd and 2nd	6	10	0	8	10	0
New Brunswick, &c.	6	0	0	8	0	0
Battens, all kinds	5	0	0	16	0	0
Flooring Boards, sq., 1 in., prepared, First	0	10	0	0	14	0
Second	0	8	0	0	10	6
Other qualities	0	6	0	0	7	9
Cedar, Cuba foot	0	0	4	0	0	4½
Honduras, &c.	0	0	4	0	0	4½
Mahogany, Cuba	0	0	4½	0	0	6½
St. Domingo, cargo average	0	0	5	0	0	6½
Mexican ,,	0	0	4½	0	0	5½

TIMBER (*continued*).	£.	s.	d.	£.	s.	d.
Mahogany—Tobasco, cargo avrg.	0	0	5½	0	0	6½
Honduras ,,	0	0	5½	0	0	6½
Box, Turkey ton	5	0	0	13	0	0
Rose, Rio	14	0	0	19	0	0
Bahia	13	0	0	18	0	0
Satin, St. Domingo foot	0	0	6	0	1	3
Porto Rico	0	0	9	0	1	3
Walnut, Italian	0	0	4	0	0	7
METALS.						
IRON—Bar, Welsh, in London ts	6	17	6	8	0	0
,, ,, at works in Wales	6	10	0	7	0	0
,, Staffordshire, in London	8	0	0	8	10	0
COPPER—British, cake and ingot	60	10	0	61	10	0
Best selected	64	0	0	64	10	0
Sheets, strong	70	0	0	0	0	0
Chili, bars	58	0	0	0	0	0
YELLOW METAL lb.	0	0	5½	0	0	0
LEAD—Pig, Spanish ton	13	2	6	0	0	0
English, com. brands	13	5	0	13	7	6
Sheet, English, 3 lbs. per square foot and upwards	15	0	0	0	0	0
Pipe	15	10	0	0	0	0
TIN—						
Straits	97	0	0	0	0	0
Australian	97	5	0	0	0	0
English Ingots	100	10	0	0	0	0
OILS.						
Linseed ton	24	10	0	24	15	0
Cocoanut, Cochin	30	0	0	0	0	0
Cocoanut, Ceylon	25	15	0	26	0	0
Palm, Lagos	25	10	0	0	0	0
Rapeseed, English pale	32	0	0	0	0	0
,, brown	30	10	0	0	0	0
Cottonseed, refined	22	10	0	0	0	0
Tallow and Oleine	21	0	0	40	0	0
Lubricating, U.S.	5	10	0	6	0	0
,, refined	7	0	0	12	0	0
TAR—Stockholm barrel	1	2	3	1	2	6
Archangel	0	15	0	0	0	0

CONTRACTS AND PUBLIC APPOINTMENTS.

Epitome of Advertisements in this Number.

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.	Page.
2,500 cubic yards of Flints	Southend Local Board	P. Dodd	June 17th	ii.
Kerbing, Tarpaving, &c.	Bromley Local Board	*Official*	do.	ii.
Main Drainage Works	Belfast Corporation	do.	June 18th	xiii.
Road Materials	St. Martin-in-the-Fields Vestry	Chas. Mason	do.	ii.
Wood Paving Blocks	do.	do.	do.	ii.
Scavenging, Dusting, and Watering	St. Matthew (Bethnal Green) Vestry	F. W. Barratt	June 19th	xiv.
Goods Warehouse and Offices, near Leeds	M. R. Co.	*Official*	do.	xiii.
Pipe Laying, &c.	Tadcaster R. S. A.	Brundell, Simmons & Co.	June 21st	xiv.
Alterations, &c. to School Buildings, Hanwell	Cent. Lond. Sch. Dist.	H. Jarvis & Son	June 23rd	xiv.
Re-arranging and Erecting Machinery, &c.	Hornsey Local Board	T. de Courcy Meade, C.E.	do.	ii.
Repairing Houses, West Norwood	Conservative Land Soc.		do.	xiii.
Wood Paving Blocks	St. Marylebone Vestry	*Official*	do.	xiv.
New Gateways at Dispensary	St. Marylebone Guar.	H. Saxon Snell	do.	xiv.
Public Conveniences, London Fields	London County Council	*Official*	June 24th	xiii.
Construction of New Bridge	Petersfield Highway Bd.	H. T. Keates	June 25th	ii.
Erection of Cottages at Langley	G. W. R. Co.	*Official*	do.	xiv.
Roadmaking and Paving Works	Fulham Vestry	W. Sykes	do.	xiv.
Manhole Covers, Gulley Gratings, &c.	Hackney Bd. of Works	Jas. Lovegrove	do.	ii.
Constabulary Station at Wellington	Somerset County Coun.	C. E. Norman	do.	xiii.
Supply of Portland Cement	Brighton Town Council	F. J. C. May	June 26th	xiii.
Painting, &c., Works	St. Mary (Islington) Guardians	W. Smith	do.	xiv.
Supply of Stone	Folkestone Corp.	A. W. Conquest	June 28th	xiv.
Erection of Grain Warehouses Cardiff		Jas. Donaldson	June 30th	xiv.
Dwarf Wall and Iron Fence	Hove Commissioners	*Official*	do.	xiv.
Iron Girder Footway Bridge, Batterses	London County Council	do.	do.	xiii.
Works at Woolwich Ferry	do.	do.	do.	xiii.
Electric Lighting	St. Pancras Vestry	Professor H. Robinson	do.	ii.
Sewerage Works	Bishop Stortford R.S.A.	E. T. Watts	July 2nd	xiv.
Erection of Covered Way	Fulham Union	*Official*	July 3rd	xiv.
Gymnasium, Bathing Shelters, Victoria-park	London County Council	do.	July 7th	xiii.
Paving Works	St. George-the-Martyr (Southwark) Vestry	do.	July 8th	xiv.
Erection of Urinal	do.	do.	do.	xiv.
Collecting, &c., Dust and Ashes	Acton Local Board	do.	Not stated	xiv.
Extensions, &c., to Schools	Woodford (Essex) Sch. Bd	E. Tidman	do.	xiii.
Painting, &c., Works, Woolwich	War Department	*Official*	do.	ii.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.	Page.
Assistant Surveyor	Boro' of Stockton-on-Tees	£120	June 19th	xviii.
Borough Surveyor	Leathersellers' Compy	£300	June 25th	xviii.
	Yeovil Town Council	£270, &c.	June 30th	xviii.

TENDERS.

[Communications for insertion under this heading must reach us *not later than* 12 *noon on Thursdays.*]

COLCHESTER.—For the alterations and additions to farm buildings, Stanway Hall, proprietor supplying all bricks, cement, lime, ballast, and sand. Mr. J. W. Start, architect, Cups-chambers, High-street, Colchester :—

Gardner & Son, Copgreshall	£1,483	0	0
C. E. Orfeur, Colchester	1,190	0	0
W. A. Chambers, Colchester	1,134	0	0
F. Dupont, Colchester	1,077	0	0
T. J. Ward, Colchester	1,070	0	0
A. Diss, Colchester	998	0	0
R. Beaumont, Lexden (accepted)	913	0	0

COVENTRY.—For building work at Messrs. Taylor, Cooper, & Bidnell's Cycle Works. Mr. E. J. Purnell, architect, Coventry :—

C. G. Hill	£5,495	0	0
J. Worwood	5,427	0	0
C. Haywood (accepted)	4,875	0	0

HYTHE (Kent).—For laying a water-main and construction of a reservoir for the Corporation of the Borough of Hythe. Mr. Alex. E. Stenning, surveyor, 121, Cannon-street, E.C. Quantities by Messrs. New & Ovenden, 121, Cannon-street, E.C. :—

	Water-main.		Reservoir.		Total.
Johnson & Co., London	£557	..	£624	..	£1,181
Wallace & Son, Maidstone	529	..	560	..	1,089
Stiff, Dover	425	..	625	..	1,050
W. M. Amos, Hythe	422	..	596	..	1,018
Hayward & Paramor, Folkestone	490	..	481	..	980
J. Pesttie, Oxford	341	..	638	..	979
E. R. Palmer, Beckenham*	375	..	475	..	850
Doleman, Dewsbury	308	..	—	..	—

*Accepted.

LONDON.—For rebuilding No. 49, Great Portland-street, W., for Mr. Joshua Thompson. Mr. Albert E. Pridmore, architect, 2, Broad-street-buildings, E.C. :—

R. Perkins	£967	0	0
H. King & Co.	960	0	0
J. Crane	870	0	0
Killby & Gayford	843	0	0
L. F. Lundy (accepted)	755	0	0

LONDON.—For alterations and additions to St. Saviour's National Schools, Paddington, W. Mr. F. G. Coward, architect :—

Pollock & Son	£4,206	1	9
Gibbon & Son	4,066	3	9
Martins	3,367	0	0
G. Bird Stanley	3,022	0	0
Simpson & Son	2,996	0	0
Wm. Oldrey & Co.*	2,661	0	0

* Accepted subject to modifications.

LONDON.—For altering the old Wells-street College, Hackney, into an auxiliary workhouse. Messrs. A. & C. Harston, architects. No quantities :—

Todd	£4,520	0	0
Martin, Wells & Co.	4,500	0	0
Oliver & Richardson	3,998	0	0
W. Johnson	3,955	0	0
Croker	3,790	0	0
Shurmur	3,789	0	0
Holland	3,743	0	0
Edmunds	3,425	0	0
Barrett & Power, Hackney*	2,970	0	0

* Accepted.

LONDON.—For iron and concrete fire-escape stairs, and some lavatory buildings at the workhouse, Bethnal-green. Messrs. A. & C. Harston, architects. No quantities :—

Flew & Co.	£928	0	0
Badham	897	0	0
Holland, J., Poplar (accepted)	794	0	0
Barrett & Power (withdrawn)	745	0	0

LONDON.—For internal distempering and painting at the Poplar and Stepney Sick Asylum, Bromley-by-Bow. Messrs. A. & C. Harston, architects. No quantities :—

Webb	£850	0	0
Robey	545	0	0
Hornett	510	0	0
Ellis	498	0	0
Lilley	487	0	0
Derby, Bromley, E. (accepted)	419	0	0

LONDON.—For painting and other works at the Paddington Poor-Law Infirmary. Messrs. A. & C. Harston, architects. No quantities :—

Vigor & Co.	£398	0	0
Handover	387	0	0
Phillips	350	11	0
Carthew	300	0	0
Foxley, King-street, W. (accepted)	298	0	0

LONDON.—For the erection of factory, for Mr. J. Gibbard, boot and shoe manufacturer, Old Kent-road :—

Canning & Mullins	£1,070	0	0
J. W. Falkner	993	0	0
Battley, Old Kent-road (accepted)	939	0	0

LONDON.—For alterations and additions to the "Lyric Hall," Hammersmith, for the Mortgage Insurance Corporation, Limited. Mr. Isaac Mason, architect. Quantities supplied :—

G. Ansell	£2,888	0	0
H. Bailey	2,720	0	0
A. Adams & Son	2,380	0	0
Oliver & Richardson	2,296	0	0
F. C Cutting	2,045	0	0
W. Taylor & Co. (accepted)	1,969	0	0

LONDON.—For alterations and additions to No. 37, Gloucester-road, Camberwell. Mr. William A. Burr, architect, 65, Chancery-lane, W.C. :—

Larke & Son	£1,157	0	0
Slevin Bros.	985	0	0
Walker	896	0	0
Shipton	876	0	0
Sloman	787	0	0
Mackie	775	0	0

LONDON.—For painting, &c., to the external portions of the Workhouse and Infirmary, St. Leonard, Shoreditch. Mr. F. J. Smith, architect and surveyor, Winchester House, 50, Old Broad-street, E.C. :—

Thomerson & Sons, Hackney-road	£1 325	0	0
Scharien & Co., Trafalgar-square, Chelsea	978	0	0
M. Calnan, Commercial-road, E.	978	0	0
J. & S. Bowyer, College-road, Dulwich	957	0	0
D. S. Rice, Studly-road, Clapham	921	0	0
W. McSwiney, Lower Sloane-street, S.W.	897	0	0
G. Flaxman, Southgate-road, N.	613	0	0
J. Ivory, Great Cambridge-street	589	0	0

LONDON.—For building boiler-house, shaft, &c., for the Anglo-American Paper Bag Co., Vine-court, Spitalfields :—

Best	£551	0	0
Caton	400	0	0
Little	389	0	0
Bamford	380	0	0
J. Yates & Co. (accepted)	350	0	0

LONDON.—For the erection of new Registry Office at the General Post Office (West), St. Martin's-le-Grand, for H.M. Office of Works. Mr. Henry Tanner, architect :—

W. Buckeridge, Kensington*	£2,247	0	0

* Accepted.

LONDON.—For alterations at "The Rose and Crown," Devon's-road, Bromley-by-Bow, E., for Messrs. Smith, Garrett & Co., Limited. Messrs. Fletcher & Migotti, architects :—

Lusk	£744	0	0
Toole	683	0	0
Haylett	647	10	0
Cocks	624	0	0
Walker Bros.	601	0	0
Salt, Limehouse (accepted)	547	0	0

LONDON.—For painting and plumbing work at the St. Marylebone Infirmary, Rackham-street, Notting-hill, for the Guardians of the Parish of St. Marylebone :—

W. G. Lilly, 5, Whitcomb-street, W.C. (accepted)	£837	0	0

LONDON.—For new story and works to warehouse for Messrs. Quicby & Co., Paradise-street, Lambeth. Messrs. Searle & Hayes, architects :—

Triggs	£819	0	0
F. & H. F. Higgs	760	0	0
Lapthorne & Co.	668	0	0

WANSTEAD.—For making-up roads for the Wanstead Local Board of Health. Mr. John T. Bressey, Surveyor :—

	Marlborough road.	Spratthall-road (part of).	Sylvan-road.	Wellington-road (part of).	Cowley-road (part of).	Hall-road.
	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.
Leonard Bottoms, Wandsworth Common, S.W.	650 0 0	243 0 0	597 0 0	359 0 0	278 0 0	387 0 0
John Burrill, Manor Park, E.	392 19 8	161 10 0	475 10 0	275 10 0	210 10 0	*182 10 0
George Impey, Wanstead, E.	384 18 0	176 10 0	396 15 0	243 10 0	177 5 0	274 10 0
Jesse Jackson, Leyton, E.	393 0 0	138 0 0	399 0 0	237 0 0	255 0 0	303 0 0
John Jackson, Plaistow, E.	*325 0 0	366 0 0	400 0 0	*214 0 0	*155 0 0	225 0 0
Joseph Jackson, Forest Gate, E.	371 11 6	136 15 6	*386 11 6	229 12 0	175 0 0	206 19 6
John Reeves, Walthamstow, E.	377 0 0	*127 0 0	478 0 0	278 0 0	217 0 0	278 0 0
G. G. Rutty, Bromley-by-Bow, E.	570 0 0	149 0 0	449 0 0	260 0 0	195 0 0	310 0 0
E. Wilson, Walthamstow, E.	435 0 0	140 0 0	445 0 0	255 0 0	240 0 0	300 0 0
Woodham & Fry, Greenwich, S.E.	435 0 0	155 0 0	416 0 0	246 0 0	180 0 0	232 0 0
Surveyor's estimates	363 9 3	192 2 11	415 19 4	250 3 4	178 1 8	282 5 0

* Tenders accepted.

LYNTON (Devon).—For the erection of banking premises for the Devon and Cornwall Banking Co., Limited. Mr. Arnold Thorne, architect, Barnstaple :—

Joshua Legg, Lynmouth	£1,620 0 0
Jones Bros., Lynton	1,612 0 0
Hancock & Cook, Barnstaple	1,550 0 0
Ridge & Sanders, Barnstaple	1,480 0 0
Barwick & Sillifant, Barnstaple*	1,395 0 0

* Accepted.

MALDEN (Surrey).—For the erection of a new Police-station at Malden, for the Receiver for the Metropolitan Police District. Mr. John Butler, architect. Quantities by Mr. W. H. Thurgood :—

Messom	£3,777 0 0
Patman & Fotheringham	3,717 0 0
Sweet & Loder	3,694 0 0
Higgs & Hill	3,683 0 0
Dove Bros.	3,675 0 0
Scrivener & Co.	3,630 0 0
Garlick & Horton	3,614 0 0
Hart Bros.	3,610 0 0
J. T. Chappell	3,600 0 0
Grover & Son	3,600 0 0
Aviss	3,593 0 0
Ansell	3,555 0 0
Lathey Bros.	3,520 0 0

THAME.—For gas-holder tank, for the Thame Gas and Coke Co. :—

B. Holland, Thame	£384 0 0
Kimberley, Banbury	311 9 0
Wm. Howland, Thame*	283 0 0
Tenders for Gas-holder and Tank Pipes.	
Clayton & Co., Leeds	£385 0 0
C. & W. Walker, Donnington	340 0 0
Danl. Howard, West Bromwich*	315 0 0

* Accepted.

TRENOWTH (Cornwall).—For the erection and completion of a new dwelling-house and farm-buildings at Trenowth, Grampound Road, for Mr. Robert Harvey. Mr. Silvanus Trevail, architect, Truro. Quantities supplied by the architect :—

J. P. Berry, Plymouth	£2,638 0 0
W. Giles, jun., St. Austell	2,436 7 2
T. J. Smith, St. Austell	2,365 3 8
R. Tiddy, Grampound	2,361 10 4
W. J. Gellard, Pentewan	2,361 10 4
W. H. Smith, St. Austell	2,151 2 8½
J. Jacob, St. Austell	2,151 2 8½
W. G. Blamey, Veryan	2,136 18 0
W. Hugh, Veryan	2,136 18 0
Lapthorn & Goad, Plymouth	2,081 0 0
W. Trevena, Plymouth	1,995 14 2
R. Bennett, Grampound	1,993 13 6
T. Bennett, Grampound	1,993 13 6
A. Richards, Grampound	1,993 13 6
James Julian, Truro (accepted)	1,961 12 2
W. H. Welsh, Truro	1,944 17 0
W. P. Tippett, St. Columb	1,889 0 0
J. Sturtridge, Lanivet	1,889 0 0

WOOLACOMBE (near Morthoe, Devon).—For the erection of two dwelling-houses for Messrs. Arnold Perrett & Co., Limited. Mr. Arnold Thorne, architect, Barnstaple :—

E. Ellis, Bideford	£1,609 0 0
A. Slee, Ilfracombe	1,520 0 0
W. R. Irwin, Morthoe	1,489 0 0
J. Thorne, Barnstaple	1,485 0 0
W. Slee, Morthoe	1,485 0 0
T. Beer, Woolacombe (accepted)	1,399 10 0

No Senders' Names.—Lists of tenders for works at Fulham and elsewhere, without senders' names being communicated to us, are ineligible for insertion.

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TO CORRESPONDENTS.

C. S. W.—C. H. B. (we could hardly send so far specially).—W. F. P.—T. B. (we sympathise with your enthusiasm, but we fear the decorative scheme suggested is not one to be recommended).—J. W. B.—D. J. (we do not publish tenders under 100*l.*).—T. W. S. (hardly to the point).—D. J. C. (have not seen the particulars referred to).—H. D.—T. H. (sent too late).—E. C. (ditto).—T. W. C. (shall have attention).—M. & T. (ditto).

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

We are compelled to decline pointing out books and giving addresses.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

We cannot undertake to return rejected communications.

Letters or communications (beyond mere news-items) which have been duplicated for other journals, are NOT DESIRED.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; all communications relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and not to the Editor

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